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GLEANINGS

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

BEE CULTURE

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STRAY STRAWS

FROM DR. C. C. MILLER.

WHIEW! What a winter at its front end!

ALL RIGHT, friend Root; bring on your report of sections manufactured, and I promise to keep mum.

MICHIGAN isn't so very near Marengo, and yet I feel sort o' lonesome when I think Prof. Cook is no longer in it.

WOMEN occupy one-fourth the space in the list of names of members of the Chicago convention. They were a nice lot too.

THAT ACCOUNT on p. 894 is another proof that the whole tramp business should be summarily stopped. Wouldn't it be a kindness to the tramps?

WILL BOTTOM-BARS $\frac{3}{4}$ square allow building down on top-bars if the top-bars under them are spaced $\frac{1}{4}$ apart? See F. X. Arnold's complaint, p. 890.

A DRESSING for cuts, sores, scalds, etc. Boil together one pound of resin and three ounces of clarified beef suet; then add two ounces of beeswax, boil one-half hour longer, and allow to cool.—*Medical Brief*.

THERE YOU GO again, Bro. Root, butting your head, on p. 896, against that time-honored belief that night air is pernicious. No, no! Never breathe night air. Always bottle up some day air and take to bed with you.

"TWENTY YEARS AGO we used to hear things preached from the pulpit that we do not hear now—at least I do not hear them now."—A. I. Root, p. 892. Bro. Root, don't you think you heard a little differently twenty years ago?

YOU'RE RIGHT, Ernest, on page 900. "Mr. Boardman is a very careful bee-keeper,"—one of our best men; but for every one that give his testimony in favor of swarming, are there not three to say they would get more honey if the bees never thought of swarming?

FRIEND ABBOTT, I'll never again write any thing but Saint Joseph—if I don't forget. But if calling your city St. Jo brought out such a flaming advertisement on p. 891, what would it have done if I had called it St. J.? I'm looking forward to a good convention at St. Joe—seph.

A NEW KINK in hauling bees is given by Mrs. Atchley, in A. B. J. It's a wire-cloth house on a wagon. Put in the bees in box hives upside down, without at all confining them in the hives, and after driving 40 miles scarcely any bees are found flying about in the bee-tight house.

"NON-SWARMING . . . means, in most cases, little or no honey." That statement, in a foot-

note on p. 889, needs a little qualifying, doesn't it, friend Root? In most cases, doesn't the colony that never offers to swarm, store the most honey? The right sort of prevention may yet be found.

CANADA SOIL doesn't seem as favorable for the production of new bee-journals as that farther south. Now, however, a second candidate appears, bearing the strong name, *Practical Bee-keeper*. It starts out in good shape, and is the highest-priced paper published, 10 cents per copy.

SKUNKS are thus killed by Mrs. Atchley (A. B. J.): Make a little hole in the small end of an egg, put in some poison, and the skunk that sucks that egg will never suck another. Don't put the poison in the large end, for there is an air-hole there, and the poison will not be mixed in the egg.

THE APICULTURIST advises to raise hives from the cellar bottom so as to keep mice out. But mice can climb, unless the hives are suspended from above, and that would be difficult with a hundred hives. Fasten the mice out with wire cloth three meshes to the inch, and then poison and trap bees.

YOUNG BEES that have not yet marked their location are more likely to be on the brood-combs than in the super, friend Root. So the trouble you anticipate in your foot-note, p. 883, is not likely to occur. At any rate, I never find lost bees hanging around piles of supers with any kind of escapes on.

A CRUSADE against foot-ball as now conducted is opened up by such respectable papers as the *Medical News*, *Harper's Weekly*, the *New York Herald*, and the *New York Evening Post*. Twenty-six deaths so far this season in England, directly attributable to foot-ball injuries, and four or five in this country.

JAMES HEDDON puts himself on record in *Practical Bee-keeper* as favoring a top-bar $\frac{3}{8}$ or $\frac{1}{2}$ deep and $\frac{1}{2}$ wide. He thinks $\frac{3}{8}$ space between top-bars best, and thinks $\frac{1}{2}$ space will have less brace-combs than $\frac{1}{4}$. He says bees will plug a $\frac{1}{4}$ space, a thing I've been afraid of; but my bees didn't do it in the single season's trial.

"A LAYING QUEEN never leaves the hive except at swarming time," is the rule. Three different men report exceptions in *Bienen Vater*. In one case the queen was absent 18 minutes, and eggs and brood in all stages were present. One man thinks there is reason to believe that these flights had occurred several times before, and the editor thinks harm might be done in such cases by having a trap on.

EVERY BICYCLER seems inclined to double himself up like a capital C. The eminent English physician, Sir Benjamin Richardson, himself an enthusiastic rider, says: "The attitude

that nearly all cyclists adopt, to a greater or less degree—bending forward over the handles of their machines—is undoubtedly unhealthy." The spine and chest-bone are affected, circulation impaired, and lungs interfered with.

ADULTERATION of beeswax, according to a German writer, may be detected by the use of benzine. Pour benzine over beeswax in a test tube; and if the wax is pure, at the end of an hour or two there will be in the tube two strata, a lower, uniform stratum of wax, and an upper stratum of clear benzine. If impurities are present, the time of separation is longer, taking half a day or several days, and the stratum of wax is not uniform in character.

THE BASE OF FOUNDATION.

HOW MUCH THE BEES HAVE TO THIN IT DOWN;
SOME INTERESTING AND VALUABLE
EXPERIMENTS BY R. L. TAYLOR.

In my experience as a bee-keeper I have made use of a large variety of foundations distinguished by weight, character of wax, name of the manufacturer, and character of machine used. For some of these, large (not to say extravagant) claims were made. As these claims related to points that went to the relative profit of particular kinds, I was naturally curious to observe whether these claims were sustained by the decision of the bees—the court of last resort in such matters. My methods of observation, to be sure, were not very scientific or exact, as a general thing, but they were sufficient to produce in my mind a general feeling of incredulity touching such claims, since nothing appeared to indicate that they were other than theoretical; and I rested in the hope that an opportunity would come to take an appeal.

The opportunity came unexpectedly, and the old questions revived: Is all foundation equally good? Does the character of the machine employed in its manufacture affect its quality? Is there any preferable method of manipulating wax to be used for foundation? Is comb made from extra thin foundation lighter in weight than that made from thin? Does age injuriously affect it? What is the truth about the "fishbone"? These were some of them. The time at my disposal was short, but I determined to make an effort to let in some pioneer ray of light upon this matter which seemed to me to lie altogether in darkness.

For the purpose of the experiment I selected eight sorts of foundation, each of which I designated by a letter of the alphabet. This, together with the description of each, will sufficiently appear from the following tabulation of the kinds selected:

A, Dadant's thin.....	10	ft. to the lb.
B, Dadant's extra thin.....	12	" "
C, Van Deusen's flat-bottom, obtained of A. I. Root.....	13½	" "
D, Root's thin.....	10.31	" "
E, Root's extra thin.....	12.03	" "
F, Given press.....	10.09	" "
G, ".....	9.37	" "
H, " " 3 years old, about.....	9	" "

The plan included an attempt to determine what foundations the bees worked the soonest and the most rapidly; but we will now consider only the question of the thinness of the septum.

After maturely considering the matter it appeared to me that there were two ways in which this could be determined with a reasonable degree of certainty; viz., by weighing and by measuring.

By a process which seemed to me to secure substantial accuracy, but which I will not take time to describe now, I cut down a set of sec-

tion combs made from the foundations already mentioned, from which the honey had been thoroughly washed, to an even thickness of something less than half an inch, leaving the septum undisturbed in each, from each of which, with a sort of cake-cutter, I carefully cut a "cake" something more than two and a half inches in diameter. These were the samples for the weighing test.

While at Chicago at the convention, in talking with Mr. E. R. Root about the matter of measuring the thickness of the bases of the cells, he informed me that there was a micrometer at his establishment, and that he would be glad to put it at my service. I accordingly gave him a set of the *septa*, each labeled with its proper alphabetical designation only, of which he had measurements taken by Mr. C. C. Washburn, the person accustomed to use the instrument. I was also favored with measurements of the bases of the several kinds of foundation made by A. I. Root. These measurements were sent me, and appear further on.

The two sets mentioned were the only ones finally made use of. They were taken from two separate cases of honey, all of one set, from one case, and all of the other from the other.

As the natural comb was the only proper standard of comparison, I added a sample of that to each set, and designated it by the letter "I."

After taking the first set to the Agricultural College, and having it weighed by Mr. Frank S. Kedzie, Adjunct Professor of Chemistry, I divided each sample into two, making two sets. The thickness of the bases of one set I had measured by Dr. Beal, Professor of Botany, etc., and the other set I sent to Mr. E. R. Root, so as to secure from two persons measurements of practically the same piece of comb. On account of the illness of Mr. Washburn, the measurements of the latter set were taken by a substitute, Mr. H. A. Hubbell.

As will appear from the tables in the case of Mr. Hubbell, the samples were measured from once to five times; in the other cases, each was measured three times at as many different points.

The measurements are given in ten-thousandths of an inch, and are as follows:

WASHBURN'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	86.6	85	76	86	96	73	66	57
	125	90	83	110	105	70	75	90	57
	95	85	93	96	92	75	75	82	57
Total.....	315	261.6	261	282	283	241	223	238	171
Average....	105	87.2	87	94	94	80	74	79	57

DR. BEAL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	70	110	65	120	70	60	60	80	50
	100	65	70	100	100	60	60	60	50
	80	100	70	80	90	80	60	60	50
Total.....	250	275	205	300	260	200	180	200	150
Average....	83	92	68	100	87	67	60	67	50

HUBBELL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	80	625	75	70	62.5	50	65	50
		110	675				90	75	75
		90							
		95							
		70							
Total.....		445	1300				140	140	125
Average....	95	89	65	75	70	62.5	70	70	62.5

GENERAL AVERAGE.

	A	B	C	D	E	F	G	H	I
Washb'n's.	105	87	87	94	94	80	74	79	57
Beal's.....	83	92	68	100	87	67	60	67	50
Hubbell's..	95	89	65	75	70	62.5	70	70	62.5
Total.....	283	268	220	269	251	209.5	204	216	169.5
Gen'l Av'e	94.3	89.3	73.3	89.7	83.7	69.8	68	72	56.5

The result of the weighing, expressed in grams, was as follows:

A	B	C	D	E	F	G	H	I
1.93	2.2398	2.093	2.2349	1.9664	1.8482	1.8886	2.083	1.6821

If any one has a desire to see how these weights would look in grains, he can gratify it by multiplying each amount by 15.432, the number of grains in a gram.

In this connection I shall give the results obtained from the measurements of the thickness of the bases of the several kinds of foundation made by A. I. Root. They will at least serve to show in a measure how little the thickness of the septum as it leaves the machine has to do with its thickness after the bees manipulate it. They are as follows, two measurements of each being shown:

	Heavy.	Medium.	Light L.	Thin.	Extra Thin.
	365	310	198	160	130
	233	240	210	135	122
Total.	598	550	408	295	252
Aver.	299	275	204	147.5	126

I have been greatly gratified at the general uniformity of the measurements as shown, and the substantial agreement therewith of the results of the weighing. Of course, since it is clearly shown that the septum of a small piece of comb made from foundation varies greatly in thickness at different points, any thing like exact agreement in the figures could not be looked for. The gratification arises, not from any thing here shown with regard to the relative value of the foundations used in the experiment, but because we seem to have at hand a sure method of determining the value of any new method of manipulating wax and making foundation. Some parts of some specimens measured were nearly if not quite equal in thinness to that of the natural comb. This seems to me to be a promise that *all* foundation can, by a little patient investigation, be so made that comb made from it will almost if not quite equal the natural comb. What man has done, man can do. We have not alone the fear of the "fishbone" to prompt us to this work. What an enormous amount of wax is wasted in that foundation whose septum the bees will reduce to but ten one-thousandths of an inch, if it might have been made so that they would reduce the septum to five one-thousandths of an inch! Or, put it in another way: If foundation whose septum the bees would reduce to nine one-thousandths of an inch is worth 60 cts. per lb., how much is that worth whose septum the bees would reduce to six one-thousandths of an inch? Numerous other questions will be suggested to the thoughtful mind. Thus, many will ask, "Does the thinness of the comb depend upon the character of the machine from which the foundation came, or does the method of preparing the wax for the machine determine the matter? These and similar questions, with a little co-operation on the part of manufacturers, can now be readily settled.

The tables it appears to me, are extremely interesting and suggestive, and it is to be hoped that our ablest apiarist will study them ex-

haustively, to the end that they may be used to the utmost advantage in making further investigations.

In conclusion, I shall state some of the most obvious conclusions to be drawn from the tables as they stand:

1. Age is no disadvantage to foundation. Thus, comb made from H foundation three years old is excelled by only two specimens, and that so slightly that it may be accounted for by the extra weight of H.

2. If the object is to produce lightness of comb, there is little advantage in thinness of foundation, there being only a slight advantage in the case of E over D, and a doubtful advantage of B over A, while F and G have about a "stand off."

3. Without regard to extra weight of foundation, comb made from foundation from the Given press is the lightest in weight.

4. In some cases, comb from foundation closely approaches in lightness the natural comb, but hardly equals it.

5. The thinner the bees work the septum, the less is the variation in it at different points.

Lapeer, Mich., Dec. 4.

R. L. TAYLOR.

INSECTS AND FLOWERS.

AGENCY OF THE BEES IN CARRYING POLLEN.

Picking up a paper lately which treats of plants and flowers, I found these words: "Pollen is borne from flower to flower on the breeze as well as on the bodies of insects; in fact, that seems to be nature's prime method of conveying the fertilizing germs from the anthers of the staminate to the pointals of the pistillate blossoms." In another place in the same paper I find this: "Honey is a vegetable production, appearing in greater or less quantities in every flower that nods to the breeze, or kisses the bright sunlight. It is secreted in the flowers for the purpose of attracting insects, thus securing the complete fertilization of the female blossoms."

Now, while both of the above are true in the main, yet, when applied to certain plants and trees, they are *not* true; neither is it true that "every flower that nods to the breeze" secretes honey. There are some points in this matter which either I or other writers fail to understand; and as it has a direct bearing on our beloved pursuit (bee-keeping), perhaps a short article to draw others out, so that more light may be obtained, will not be amiss.

I understand that the first purpose for which the honey-bee was created was for the fertilization of flowers, while the storage of honey was only for the preservation of the life of the bee, so that the perpetuation of the species might continue for this purpose (fertilization of plants); that man, after a period of time, found that honey was good to eat, and thus utilized the product secreted by the flowers and stored by the bee by making it his food, while the bees perished from such colonies as were robbed by man; that, as the years went by, man learned that the bees would store more honey than their wants required, so surplus apartments were furnished the bees, which were removed when filled, thus leaving enough in the hive, or home of the bee, to supply all its needs; and that from this *surplus* came the honey of commerce and our industry of bee-keeping as we now enjoy it. If I am correct in the above (and I believe I am), the people of the world have the bee-keepers to thank for bringing the bee from its primeval home (the hollow tree, especially as our forests are fast becoming obliterated by the advance of civilization), and

scattering it broadcast throughout the land, to fertilize the millions of flowers which otherwise would produce no fruit. But, to return to the two paragraphs quoted.

While I believe the bees were created for the fertilization of flowers, yet I also believe that not half of the different species of plants and trees require the aid of the bee to fertilize their flowers, and that only those which require the aid of the bee secrete any honey; hence, I said that it was *not* true that every flower "that nods to the breeze or kisses the bright sunlight" secreted honey. In this we see the wisdom of the Creator—bees created to fertilize flowers which could not be fertilized in any other way, and honey placed in these flowers to attract the bees to them. Thus we have the clovers among grasses secreting honey, while the timothy, orchard, red-top, and other grasses do not secrete honey, for they are fertilized by the "breeze." All the fault I have to find with the first quotation is, that it is represented that both the breeze and bees may be needed to fertilize the same and all plants; while I believe that plants and trees which can be fertilized by the breeze do not need the aid of the bees; and that those requiring the aid of the bees *can not possibly* be fertilized by all the breezes that ever blew. To be sure, bees sometimes collect pollen from many flowers which do not require their aid; but, as I said before, honey is secreted only by those which do. Take the flower of the squash, for instance: Gregory, who is certainly good authority, in his excellent treatise on this plant tells us that squashes can be fertilized only by the aid of bees and insects, and proves the same by giving experiments tried, where fine netting was placed over the female flowers on certain hills, when not one of the flowers thus treated produced a squash, while the hills not so treated gave a good crop. Any one looking at a squash-flower will at once come to the conclusion that it is impossible for the wind to carry the pollen from one blossom to another; hence we find it secreting honey to attract the bees. Prominent among this class of flowers which needs the bees to fertilize them, we have the clovers, fruit-trees of nearly all classes, basswood (linden) trees, buckwheat, and fall flowers quite generally. Of the class that does not need the aid of the bee, I will mention grasses of all kinds growing in this locality (except clover); grains of all kinds (except buckwheat); and most of the trees of the forest, such as beech, birch, ash, hemlock, etc. With the grain I would include corn. I know that some writers tell us that bees gather honey from corn; but after a careful watch for over a score of years I have failed to find a single bee having any honey in its honey-sac while at work gathering pollen from corn-tassels. If the stalks are bruised or cut in any way, sometimes there is a sweet substance that exudes which the bees gather, but this can not be properly called the secretion of nectar.

In the above I have given my views regarding this matter, and stand ready to be corrected by any one who can show that I am wrong. I am no botanist, therefore can not give a scientific article on the subject; but if there are any good botanists among the readers of GLEANINGS, I (and I think all of its readers) should be pleased to hear from them on the subject. Knowledge along this line will help us to disarm the many jealous ones about us who seem to think the bees are injuring them by taking honey from the flowers. Let us keep it ever before the public, that the bees are not only the bee-keeper's friend, but the *especial friend* of the farmer and fruit-grower. Thus doing, many of the troubles of the past will be saved.

Borodino, N. Y.

G. M. DOOLITTLE.

PULLED QUEENS.

DR. MILLER TELLS ALL ABOUT THEM.

One of the bee-journals for which I have a real respect asks for a "rest" on pulled queens. Why? If it has tried them and found out that there is any harm in using them, would it not be a better way to tell the harm in the case? Certainly there has not been such a great deal said about them; but enough has been said against them to show that most if not all of those who say any thing against them have never tried them and don't know what they are talking about, merely giving speculative opinions. Those who have tried them will no doubt enjoy a quiet smile on being gravely informed in one of the bee-journals that it is said that "pulled queens are very short-lived, and that but few of them ever become fertile on account of having their wings destroyed by *pulling* the queen from her cell before being properly matured." Elsewhere the suggestion is made that it would be better to use queen-cells, thus letting the queens come out at their own time; and one man goes so far as to say that, instead of pulling queens, he puts wax over the spot in the cell that has been gnawed by the queen so as to hold her prisoner in the cell a longer time, thus making her stronger.

I will try to be magnanimous enough not to oblige any one to use pulled queens who does not want to; but as I have found no little advantage and convenience in their use myself, I will try to clear up some misunderstandings that seem to prevail.

When a queen is raised at any time in a colony where there is no intention of swarming, I think it will be found that the queen emerges from her cell too young and tender to fly, and quite light-colored. I can hardly believe, however, that nature is making any mistake in the case, and I do not believe that she would be any the better queen for longer confinement in the cell. In other words, I think she will mature as well out of the cell as in it. At least the bees seem to think so, and govern themselves accordingly.

If swarming is contemplated, a number of queen-cells being built, one queen is allowed to emerge, and the rest are held in their cells. One or several of them will be thus confined a day or more, the free queen piping and the others quacking. They are not confined in the cells because they are any better for it, but because the exigencies of the case require it.

Now, suppose we go to a hive containing these queens in cells. Take out a frame and find a queen-cell. Looking close, you may see a little slit gnawed by the queen, passing part way round the cell near the smaller end. Through that slit the workers feed her during her imprisonment; and, when allowed by them, she will enlarge the slit and push open the cap.

But you may not see any such slit. If you don't, I know of no way of telling whether the queen is matured enough to emerge, or too immature to emerge for several days. Pull the cell and see. That doesn't mean that, by some means, you are to get hold of the queen's wings and pull on them till you get her out of the cell. It's the cell rather than the queen that is to be pulled. Take hold of the cell and pull it off. A bee-keeper of any experience will readily do that without injuring the queen, and so, probably, would one without experience. All that's necessary is simply to grasp the cell tight enough to pull it off, but not tight enough to mash it.

The probability is, that, in pulling it off, you did it in such a way that it left the base of the cell entirely open. In that case the queen will

back out in a little while, providing she is mature enough, although she may persist in gnawing open the cell in the regular way, and coming out head foremost. If she is old enough, the cap has been already gnawed off, all but a little hinge, and she will promptly push her way through.

You may, however, find her at any stage of immaturity, down to the grub. If too immature for use, all you have to do is to throw away the cell and try another. At swarming time, queen-cells are so plentiful as to be of little account. If, however, you think the cells sufficiently valuable, and don't wish to destroy any, don't take any except such as show the queen gnawing her way out, and leave the others to ripen. With the point of a penknife, scrape over the place where the queen may be expected to gnaw through; and, if the cell is ripe enough, the knife-point will push its way through, and you will easily pull off the cap and allow her ladyship to emerge. If the cell is not ripe enough, there is little danger of the knife pushing its way through.

If the queen is strong enough to cling to the side of a comb, and walk over it without falling off, she is probably mature enough to be good. But you can easily decide whether she is mature enough by putting her in the hive where you want her accepted. If she is not mature enough the bees will promptly seize her and cast her out; but if she is mature enough they will pay little attention to her.

If you have a case where it is difficult to introduce a queen, and have one that is barely mature enough to be received, and another that has been imprisoned in its cell two or three days by the bees, I think you will find the bees more likely to accept the younger one.

Now, where's the advantage of giving a pulled queen, over giving queen-cells? I'll try to tell you some of the advantages. You are not dealing with a pig in a poke, but know what you are doing. If you give a cell, you are not sure what is in it, if, indeed, you're sure there's any thing in it; for, sometimes after a queen emerges, the bees close up the cell so it has all the appearance of having a queen in it. I've seen many a cell with a dead queen in it, but looking all right. It takes less time to put in a queen than a cell. Bees will sometimes destroy a cell when a princess of the right age would not be molested. The cell may have in it a queen with defective wings, or it may be objectionable in other respects; but in giving a pulled queen you need not give any except one whose appearance suits you in all respects.

On the other hand, I don't know of a single advantage a queen-cell has over a pulled queen.

C. C. MILLER.

Marengo, Ill.

[There are a good many facts regarding pulled queens explained above that are new to us. If the doctor explained it before, we did not know it. It will pay every bee-keeper to carefully read this.]

THOSE OLD BEE-BOOKS.

MORE ABOUT HUISH AND HUBER.

A further perusal of Huish vs. Huber constrains me to make what might be called a comparative statement of the claims of each of these great men in the leading points in apiculture. But it must be borne in mind that the statement of Huber is what Huish makes him say; and I fear his prejudice has often misrepresented the blind old man, and even rendered its owner more blind mentally than

Huber was literally. Huber, according to Huish, maintains there are eight kinds of bees: viz.:

1. The queen, who lays certain kinds of eggs; 2. The drones, one of which is sufficient to fecundate a queen during the whole of her life; 3. The common bees, who are females, having ovaria, and laying eggs, from which males only spring; which males, however, are never seen; 4. Wax-makers, from whose body the wax exudes; 5. Wax-workers, who make no wax, but who nevertheless construct the cells; 6. Royal-jelly makers, who fabricate an extraordinary liquid, where-with a queen is generated whenever one is wanted; 7. Nurse-bees, whose office it is to attend upon the brood; 8. Black bees, who are born only to be starved to death.

Now, I can not make out that Huber says all that in just those words. He shows quite clearly that bees at a certain age and under some conditions do so and so; but he does not maintain that a young bee is a "kind of bee" in the sense that a drone is a kind, or that a worker or queen is. Let me put it this way: The people in a certain community work at eight different trades—that is Huber's proposition. Huish concludes from this that eight radically different kinds of human beings are employed, which does not follow. Huber tries to show that the economy of the hive may be divided into eight branches; one of these branches is monopolized by the drones, one by the queen, and six by workers of varying age. I think that will reconcile the two men.

Huish says, "The bees never allow more than one queen in a hive."

Huber says, "The bees sometimes allow two queens in a hive, a big one and a little one; the latter only laying the eggs of males—allowed by Kirkby, and acquiesced in by Rennie."

In ordinary conditions, bees certainly manage to worry along with one queen; but that two are occasionally found together shows that Mr. Huish, F. Z. S., was wrong for once. Has it been demonstrated, however, that two queens in a hive do exactly the same kind of work? Doesn't one of them act as a "sub," and do chores?

Huber says, "The queen oviposits at all seasons of the year, and even in winter."

Huish retorts, "The queen oviposits only in the spring and summer, and *never* in the winter."

Evidently, here is a case where the writers speak from their own experience, and where that great makeshift *locality* must come in to unravel the mystery. What Huish meant by "winter" was something Huber had probably never experienced. Although it is hardly more than an hour's ride from England to France, the transition in climate is remarkable. France is one of the most pleasant, beautiful, and sunny lands in the world, while the climate of England is very changeable, rainy, and foggy, with violent cold in winter. The word "winter," as used by the two men, is a relative term. If they had spoken of a stated temperature and the same degree of moisture, with the same prevailing winds, their experiences would have been about the same.

Huber says that it is the mother queen that departs with the first swarm, while Huish says positively it is the young queen. Probably Huish had in mind a bride leaving home to start a new one, leaving her mother behind; but in this case, Robert, the old homestead is deeded to the bride, while the old lady "goes back to York State." I rather think the "popular prejudice," as Dickens calls it, will side with Huber, regardless of locality.

Huber maintains that queens meet the drones in the air, mate by actual contact, the drone losing the characteristic feature, and dying. No fact in this world is better attested than

that. It has been altogether removed from the realm of doubt and mystery as much as it has been in regard to rearing horses and cattle; and yet Mr. Huish says, "The queen is not fecundated by any act of coition with the drone." That is one of the most astounding errors I have ever known so erudite a man as Huish to commit.

Huber says, "A swarm is not accompanied by any drones."

Huish says, "A swarm has never less than two or three hundred drones."

I think we shall have to side with Huish here, for positive evidence is on his side. It seems presumably true that some drones would go with a new swarm, as their presence might be necessary.

Huber claims that the maximum of young queens hatched in a hive in one season is 27; Huish says 7. Some writers claim more than 7, but probably Huber's estimate is none too large.

Huber claims that bees travel half a mile for food, while Huish says they go five or six miles. We know that bees have been known to go six miles, but it is very seldom, and certainly unprofitable to go so far. The fact is, they will go till they "get there."

Huber says that extra queens are killed by each other in single combat, while Huish claims that the workers do that exclusively. Both may be right, but it is well known that a queen shows more hostility to a rival than a common bee would toward the same queen.

Huber says some colonies throw off seven or eight swarms and yet winter well. Huish says, "No hive was ever yet known to throw off seven swarms."

Huber says, "Food of various kinds is administered to the larvæ according to their ages." Huish says, "No kind of food is administered to the larvæ in the cells." Certainly Huish was wrong.

Huber claims that wax is made from honey or sugar, imbibed by the workers, from whose bodies it exudes in scales between the rings of the abdomen. Huish says, "Wax is made from an elaboration of the pollen of flowers in the second stomach of the bee." Huber is doubtless right.

Huber claims that queens use their sting to kill young queens in their cells, while Huish maintains that queens never sting on any occasion whatever. It seems strange that God should make so important an organ for nothing. But we know they do sting a rival.

I deem it useless to make any further comparison of the opinions of these two writers, as all the points they discussed are now settled to our complete satisfaction, sometimes favorable to Huber, sometimes to Huish, and sometimes to neither.

Huish gives a very interesting chapter on the treatment of honey. The extractor was not then known, and honey was strained through a sieve. He says:

The French impart a peculiar flavor to their honey by placing orange-flowers and other aromatic herbs in the sieve through which the honey passes. This artificial flavor is supposed by many to proceed from the peculiar kind of flowers from which the bees extract their honey; and in the great honey districts of Narbonne and Languedoc, the honey has always an artificial flavor imparted to it, which enhances its value in the market.

That seems like a "harmless improvement," but it is doubtful whether it is now much in vogue.

Probably no person in the world is so much afraid of being swindled as John Bull. On account of some crooked operations in honey, under the management of one Hoge, some 15 years ago, the English placed a practical boy-

cott on American honey, and have deprived themselves largely, in consequence, of the best the world affords in that line. In the London market the most unwarrantable prejudice prevails against American honey. It certainly is to be regretted that so many standard articles of food can be and are mixed with stuff of different kinds to cheapen them; but the English, in spite of their pains, eat a good deal of "truck" they never intend to. Huish speaks of the condition of honey in London in his day as follows:

There are few articles in trade which are more adulterated than honey; and the article which is sold in the London shops, under the name of prime honey, bears little or no affinity with the real nature of that article. As it is generally sold by weight, the cottagers take care in the first instance that the honey shall not pass into the hands of the wholesale dealers without receiving its due proportion of flour or other heavy farinaceous substances, which in a short time places the honey into a state of fermentation, and divests it of a great portion of its natural sweetness. A second adulteration takes place when it comes into the hands of the retail dealer, and thus the native virtues of the article are completely destroyed. The detection of the admixture of flour with honey is very easy. Dilute a little honey with cold water; and if it be adulterated with flour, the water will become of a milky hue. Another method is to clarify the honey, by placing a small quantity in a jar, which must be half immersed in a saucepan of water. When the water is brought to a boiling heat, the honey becomes perfectly liquid and clarified; but if adulterated, a thick scum rises to the top, which, on being taken off and suffered to grow cold, crumbles into a farinaceous dust.

The "cottager" alluded to above corresponds to "the honest old farmer" of this country. Some country editor, not noted for his temperance proclivities, once made an editorial note, saying, "For the effects of intemperance, see our inside this week." Doubtless the average Londoner would like to examine himself the same way after eating some "shop" honey made by the good yeomanry of the North country. Quite likely, however, that fraud has been stopped before now.

In spite of what we now regard as wild assertion on the part of Huish in some respects, his book is very readable on account of the writer's spicy English and its remarkably nice print.

Medina, Dec. 8.

W. P. Root.

BEES ON A RAMPAGE.

THEY STUNG EVERY THING ON THE FARM; WAS IT A CASE OF ROBBING?

Friend Root:—I am inclined to think there are times in the life of every bee-keeper when he wishes he had never seen nor heard of a bee, no matter how enthusiastic he or she is or ever was. Such were my thoughts and experience late one evening during the latter part of last August. The fuss began near sundown. Had it been earlier in the day, I really do not know what would have become of us all. It seemed as though all of my 50 colonies went on a rampage all of a sudden, which vexed me so I felt that, if it were in my power, I should like to kick the whole outfit clear across the continent into the middle of the Pacific Ocean, so furious were my little pets. The strife and havoc were terrific while the trouble lasted. The first intimation I had of the fuss, I was quietly cutting some weeds from under a clump of rosebushes that grew on the lawn, when, all at once, about half a dozen bees stung me in the face and on the back of the neck. It struck me at once that I had cut into a swarm that had settled there. The bees kept popping it to me as I broke to the house for a veil. Then I heard my little boy, 12 years old, cry out, "The bees are stinging!"

Grandpa, who was in the barn lot pumping water for the stock, was told to run or they would sting him to death. I got a bee-veil, and my wife grabbed several pieces of old carpet off the fence. Grandpa was down, all covered with bees. We got him up, and all hands made a dive and got into the barn. I peeped out from my hiding-place, and saw the cows running wild for the pasture, with their tails high up in the air. The horses were running, stamping, biting, and kicking, all at the same time. Pigs were squealing, running, and twisting their bodies in all shapes. Our old tomat ran into the barn, with his tail as large as a rolling-pin, while the dog ran off the place. The chickens and turkeys came in for their share, and such a scattering and squalling were never seen or heard before. Several half-grown turkeys were stung to death. Every fowl as well as every quadruped on the place, I think, was stung more or less. The onslaught lasted until dark. Had this thing happened earlier in the day, I do not know what would have happened. As it was, had no one been around to help grandpa, he would surely have been stung to death. By the light of the lamp we picked 27 stings from his face, neck, and head; besides, there must have been a good many in his hair, which we did not find; yet it did not make him sick nor cause him to swell up in the least.

These bees, when they came at us, did not hesitate and buzz around awhile, but came as *straight* and swift as a rifle-ball—zip, buzz, buzz. Mrs. T. says she would much rather have a bee sting her at once, and be done with it, than to have one stick tight on her clothing and buzz and buzz. It keeps her in suspense, as every moment she expects to be stung, and often is not stung at all.

Now, friend Root, I claim to be a careful bee-keeper; and what started the bees on this rampage, and that, too, in a fair honey-flow from heartsease, is to this day a mystery, as no stock of any kind could get into the apiary, and not a hive was disturbed in the least, so far as we know.

M. F. TATMAN.

Rossville, Kan., Nov. 20, 1893.

[We never yet knew of a case, unless it be the one under consideration, where bees generally throughout the apiary would sting any thing and every thing, unless robbing had been going on. Indeed, we can hardly conceive it possible that yours should so behave unless such had been the case. It may have been going on unbeknown to you; but robbing will occur when the honey-flow is dropping off. Thus the bees may have been gathering honey some, and yet be ready to steal and kill if honey were to be had. A horse or cow may overturn a hive, but the stingers belong to one hive, and even then will quiet down shortly. Many a case of bad stinging have we traced to robbing, even when the owner of the bees insisted that the latter had not been robbing.]

THE MICHIGAN APICULTURAL STATION, AGAIN.

R. L. TAYLOR REPLIES.

"*Et tu quoque, Brute*," *Ed. Gleanings*.—The editor of the *American Bee Journal*, by a play upon the word "report," using it in two senses, attempts to parry the force of what I said about my right to dispose of any accounts, not required by the State Board of Agriculture, of the experiments I have made as I see fit, and about his duty to give the *Review* due credit when he copies such accounts from it; but the above time-worn exclamation involuntarily came to

my lips when I found you, in *GLEANINGS* of Dec. 1st, in the same error.

I wonder if I can make myself understood. My contract with the Board binds me, at the end of the year, to prepare an account of all the experiments and investigations I have made under that contract; that account is called, technically, a "report," and in time will appear in the form of a bulletin. That is one thing. When I prepare an article or account or report of some one of these experiments for the use of some journal, that is another thing. This latter the Board does not employ me to do, does not pay me to do, and does not expect me to do; and these latter accounts can not, by being put together, make the technical report. They all contain matter of argument, etc., which would not be proper in such technical report; indeed, they can be of no very great assistance in preparing that report, for that must be written *de novo*.

What "nice" question, then, can there be about whether I have the right to sell or otherwise dispose of such voluntary accounts as I see fit? You say the same thing has been done by others at other stations, but that the wisdom of it has been questioned. Why should it be? It subserves everybody's interests, and hurts no one's. It costs the Board much money to disseminate information by bulletin, for which it gets no return; so it is, of course, glad to be aided free of cost; and just as certainly are those who are interested in the experiments benefited by getting the results fresh, in "sizeable" pieces and a year beforehand.

Again, as the labor bestowed upon the articles referred to was, in the strictest sense, mine, and consequently the articles themselves mine to dispose of as I should see fit, there could, of course, have been no understanding with the Board as to how I should dispose of them.

Mr. Editor, does any thing in the above seem vindictive, or to smack of bitterness? If you say yes, then you don't fully understand me yet. But I admit I don't like loose reasoning.

Lapeer, Mich., Dec. 4.

R. L. TAYLOR.

[If we have misunderstood you, we are sure you must have misunderstood us. We do not find any thing in our editorial where we played upon the word "report," giving it two senses, or held that Bro. York should or should not give credit to the *Review* for experiment articles he may copy from that paper. If there is any thing on page 902 that gives you that impression, then either we did not say what we meant or you did not read us right. What we tried to say was this: If the Board to whom you and Mr. Hutchinson originally appeared had no objections to your sending reports or articles regarding experiments that you were making for the State regularly to the *Review*, i. e., if there was an understanding with them to that effect—why, *then* there was, in our estimation, no objection. As you say in a late number of the *American Bee Journal*, that you have the "full authority and even the thanks of the Board" for this work, then *GLEANINGS* sees nothing out of the way. Perhaps Bro. York questions your right to send these articles to any particular paper. Ordinarily we might agree; but Bro. Hutchinson took much time and money—in fact, was the *only* publisher who took any interest in the matter at the start. For this reason, and for the fact that he pays for this extra service, he ought to have the first right to the articles. Then, too, Mr. Hutchinson does not ask you, if we are correct, to give a full report of all your experiments, but only certain phases of them in the shape of articles; this is extra work, and outside of your forthcoming bulletin report. In a similar way

we asked you, since we had helped you in the matter of measurements, to favor us with an article on the thickness of the bases, or septa, of foundations. You have kindly complied, and the article appears right after "Straws." In saying this we have not tried to defend Mr. Hutchinson or Mr. Taylor, for they are able to defend themselves, but to give the matter as we see it.]

SCRAPS.

BEE-ESCAPES; PRACTICAL SUGGESTIONS.

Last season I used Porter bee-escapes, putting them on in the evening and taking off the honey in the morning. It worked nicely. This season I tried smoke, but my bees got cross. There were always a few drops of honey spilled. This started the robbers, who took advantage of the smoke-subdued bees, and I lost 25 stands by robbing. I shall use escapes altogether next season.

CANDIED COMB HONEY.

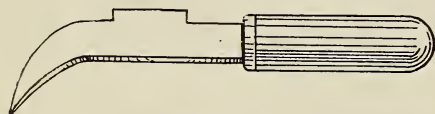
When the honey-flow is irregular the unfinished uncapped cells granulate before the flow starts again, or they are evaporated to such an extent that they candy after being capped.

COMB OR EXTRACTED?

When the season is good, there is but little difference with me. This season the weather "blew hot and cold;" in consequence, the extracting-hives averaged 200 lbs., while the comb-hives gave but 50 lbs. It is a good plan to work for both, and thus be sure of a fair crop.

APIARIAN TOOL.

The handiest thing about my apiary is a large pruning-knife with the blade set solid in the handle. I make the blade out of a flat eight-



inch file, and temper so that I can pry up a frame, separate sections, scrape off propolis, loosen a lid, or take off the side of a hive, without breaking the blade. The curved point gives a purchase equal to a bar.

CLEANING SECTIONS.

To clean the edges, grind off the half of a 1/4-inch chisel so that the long point will act as a guide. This shaves off the soiled wood, and



leaves a clean new surface. Or, make it a scraper by turning the edge of a steel blade backward, and having a guide to keep the



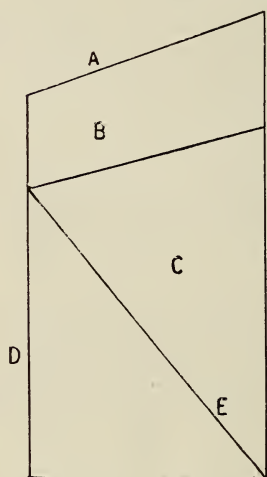
scraper from cutting the caps along the edge. To clean the flat sides, glass is frequently used; but it is dangerous, as the broken glass frequently gets into the comb, and might be swallowed by children, and cause death. The cabinet-makers use a steel scraper that can be bought in any hardware store for 10 cts., and

there is nothing better. In the absence of a hardware store, cut a piece of steel out of an old saw-blade. File the edges square across, and then, with the back of an old razor, rub back and forth over each edge, gradually turning the edges out and down. The razor should have its sharp edge ground dull, and be set solid in a handle.

GLUCOSE.

A wholesale grocer offered me 8 cts. per lb. for my crop of extracted honey, and explained that he could sell it at 6 cts. at a good profit, by adding 3 lbs. of glucose to each pound of honey, and stated, "My wife brought home a jar with a piece of comb honey in it, and the jar filled up with what looked like very nice honey. She put it on the table, but I tell you it was simply abominable—nothing but a piece of comb honey and glucose. The grocery stores of San Francisco are full of it, but it won't sell, as the people have tumbled to it."

WAX-EXTRACTOR.



To get bottom as well as top heat from the sun, I make my wax-extractor with two glass. A is glass; B, comb-box; C, wax-box; D, glass; E, this face is painted black; F, which is the back, is straight. As the wax melts, it drops on to E, which is always hot. F, being perpendicular, is not touched by the wax; the heat from the glass D keeps the box C and the bottom of the box B very hot, and does

away with the need of a lamp, which is unsafe and expensive. If I had the past season to work over, I would run entirely for extracted honey, and "run" it on different lines; but the bees can't gather honey from flowers that are past, and I shall have to wait until another season to profit by the experience of the past.

Murphys, Cal., Oct. 20. E. H. SCHAEFFLE.

[Your scraper-knives are good, and no doubt will be found to be very serviceable. Your idea of having two glass—one to heat the top of the wax and another to heat the bottom—is also good. Come again, friend S., with some of your new kinks.]

SCRAPING SECTIONS.

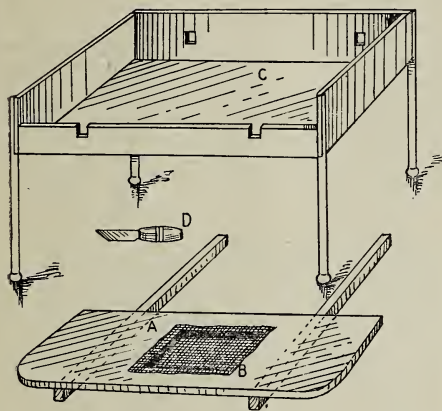
A HANDY SCRAPING-TABLE.

Inclosed I send a pencil-sketch of the apparatus on which I scrape my honey-sections, filled and unfinished. The illustration, I think, will make all plain. When the shelf is adjusted, the height should be such as to have the shelf just over your lap. This leaves your arms and hands in an easy position to work when you sit down to the table. The screen bridge being in place on the shelf, as seen in the illustration, and your sections being in easy reach, you are ready to proceed.

The scraping-knife illustrated is a common

shoeknife, and should be of the best steel, with the blade broken off up to about from $1\frac{1}{2}$ to 2 inches in length, and shaped and ground down to quite a slanting or beveled point, as illustrated in the cut; then by gripping the handle, with the blade between the finger and thumb,

the fine particles leak through the screen on to the lap?]



C, table, or box on legs; A, table shelf, removable; B, wire screen bridge to scrape sections on; D, knife for scraping.

the thumb acting as a gauge to gauge the point just the right length to scrape the edge or inside, if the honey is not worked up flush to the wood without marring the honey. If the outside edges need scraping, I lay the section down on the screen and scrape one edge, then turn it up and scrape the inside edge of the frame if it needs it, always elevating the section at a suitable angle, the right-hand corner resting on the screen when scraping the inside edge next to the honey; then scrape toward the left hand, or *vice versa*. Proceed in like manner until every side or surface is cleaned. These directions are to apply partly, when the honey is not worked up flush to the wood.

On the above illustrated honey-table this season I have scraped and cleaned up about 2000 lbs. of filled sections, and scraped several hundred of partly filled ones, kept over from last year; and when they have passed through my hands and over the screen bridge they need no brushing or dusting off; and with the renovating process through which they pass, if the work is thoroughly done, and also rubbing the cells down as described in Sept. 1st GLEANINGS, they can, at least if they contain foundation or comb, be used with profit.

The fall flow of honey on buckwheat here is a failure for the first time, in my recollection. The same number of colonies that gathered 2000 lbs. on the first flow have not gathered 200 lbs. on buckwheat. The result is, a lot of empty and partly drawn-out comb, which I am now renovating and storing away in dust-proof boxes for next year's use.

On page 710. Sept. 15th GLEANINGS, Emma Wilson says, "Scraping a single case of sections may seem to be fun; but when I have scraped 1000 or 1500 in a day, it seems like work." Whew! I think so. This beats my time. How many sections do your cases hold, Emma?

G. J. FLANSBURGH.

South Bethlehem, N. Y., Sept. 20.

[We have carefully gone over your description, but do not find that you state just what is the specific use of the box or tray with legs on it. We presume it is to receive the scrapings that accumulate on the shelf A; but, say, don't

HEREDITY IN BEES.

DO CHARACTERISTICS COME SOLELY FROM PARENTS, OR MAY THEY COME FROM NURSE-BEES?

At different times the question has been raised as to what difference, or whether any difference, is made on the characteristics of a young queen by the nurse-bees that attend her during her larval existence. Given two eggs from the same queen, a queen raised from each of them, one of them fed and reared by Italian bees of the best qualities in every direction, the other fed and reared by the vilest lot of blacks that can be found, will one queen be as good as the other? Falling back on my own experience, I have answered the question somewhat in this way: "I've raised lots of queens, some of them in colonies of blacks, and some in colonies of Italians, and I never noticed any difference. It's the queen that lays the egg that gives character to the offspring, as also the drone with which she mated. After a hen lays an egg, can you change the color or the characteristics of the offspring by putting the egg under a different hen to be hatched and fed? When the young queen hatches from the egg, does not the same rule hold? No, I am careful to raise young queens from the best stock I have; but as to the nurse-bees, I care nothing, only so that the young queen be raised in a strong colony, and at a time when plenty of food is to be had."

But from time to time come expressions of belief that a real, an essential difference is made in the characteristics of the young queen by a difference in the nurse-bees; and these expressions come from such respectable sources that they are not to be pooh-poohed and lightly put aside with a wave of the hand. True, the men who hold such belief are for the most part, if not entirely, men who live on the other side of the ocean; but they are men of weight, among them Schönfeld, Bertrand, and Grimshaw, representative names among German, French, and British bee-keepers.

So it may be the part of wisdom not to consider the question as one fully settled, but to give it at least an impartial reconsideration. Even if in all cases previously known it has been found that there is no difference in the appearance of a young queen, whether raised by black or yellow bees, it does not follow conclusively that there is no difference in character, for we well know that there may be a difference in character with no perceptible difference in appearance. A child may bear a striking resemblance to one parent in appearance, and be more like the other parent in disposition. Is it not possible, therefore, that there may be such a thing as a queen having all the outward looks inherited from one source, and other characteristics, not apparent to the eye, inherited from another source?

I don't know much about the law of heredity, and I don't know that the matter is very fully understood at the best. Still, I think we can tell something about it. We know very well that, in the case of the mammalia, the traits of the offspring may be inherited from either parent. A calf is born showing a color like its mother and utterly unlike its father. That color it got from its mother; and the question is, when and how. Very clearly, during its life in the womb, and almost as clearly from the nourishment received from the mother while in the womb. That calf is white, like its mother, although the father is black. The germ, when implanted in the womb of that mother, had no

tendency to white. That same germ implanted in the womb of a red mother might have produced a red calf. So it seems pretty clear that the calf received inherited traits by means of the food it received before the time it came forth as a perfect calf.

A white hen mated to a white cock lays an egg. Whether that egg be hatched under a white, black, or speckled hen, or in an incubator, the chances are a hundred to one that the chicken will be white. An egg laid by a white hen mated to a black cock is hatched under a black hen, and it turns out a white chicken. Isn't it a pretty clear case that the chicken gets its color from its mother, that no change took place during the period of incubation, and that, potentially, a white chicken was in the egg when it was laid? In a certain sense there may be some truth in that—so far, at least, as to say that the hen which sat on the egg had no influence on its color; yet in the fullest sense it is, I think, not true. When the egg was laid, if I am not mistaken, the germ was there with no characteristics except those received from the sire. If such delicate operations could be performed as to transfer the germ from that egg to one laid by a speckled hen, I imagine that it might hatch out a speckled chicken.

If I am correct in this, then the traits of the mother were received by the germ during the time of incubation through the nourishment contained in the egg. A minute ago I said that the calf received inherited traits by means of the food it received before the time it came forth as a perfect calf. In that statement, change "calf" to "chicken" and will not the statement be just as true? That is, the chicken received inherited traits by means of the food it received before the time it came forth as a perfect chicken.

I think now you will see what I am driving at. If it be true of the calf and the chicken, may it not be equally true of the young queen, that she receives inherited traits by means of the food received before the time of coming forth as a perfect queen? In the case of the calf, the pre-natal nourishment is furnished and used inside the mother; in the case of the chicken it is furnished inside the mother, but used outside after the expulsion of the egg. A step farther is taken in the case of the queen, and the nourishment is not only used after the expulsion of the egg, but furnished afterward, and furnished from a different source; viz., the food furnished by the workers. Why shall we not admit that this food used before the time that the queen comes forth a perfect insect makes its impress on the character of the queen, just as much as the food used before the emerging of the perfect calf or chicken? Moreover, we well know that a difference in the food used at that time makes all the difference between a queen and a worker; and is it not possible that it may make other differences? To this, however, it may be replied that there is no difference in character caused by the food in the case of queen and worker—that it is only a case of completed or retarded development.

One of the strong arguments used by those who think traits are inherited from workers is, that the young queen can hardly inherit from the father or mother any traits which neither of them ever possessed. Neither the father nor mother of a young queen ever gathered stores, built comb, or chased a bee-keeper to sting him. How can they transmit traits that shall make good storers or comb-builders, or that shall make cross bees? How can a queen transmit the trait of hardness, no matter through how many generations bees be kept in a bleak climate, so long as the queen is kept in the center of the brood-nest, and there kept warm?

If, now, you ask me to say whether bees inherit traits through the nurse-bees by which they are fed, I can only say, "I don't know." Some good authorities say they do. Other good authorities say they do not. The theory that traits descend only from father and mother is a long-established one. An exception to a long-established theory is not readily admitted. But we know now that the Dzierzon theory is true, although it came in direct conflict with a long-established theory. So there is at least a possibility that there may be an exception to the rule, that traits descend only through father and mother. If there is truth in it, then it is of great practical importance that we know it and act upon it. The interests involved make it wise for us to try to find the truth, whatever it may be.

C. C. MILLER.

Marengo, Ill.

[During the reading of the fore part of the article we felt somewhat skeptical as to any inherited traits being received other than from mother and father; when we came to the latter part we doubted less. While we may say, in the case of the calf and the chicken, there would be none, yet when we come to the bee we may have to take a different view, because several hundred individuals, besides the father and mother, may have and probably have had something to do in the rearing and feeding of the baby-bee. We have had scores of reports, showing that bees from a queen and drone of gentle stock are nearly as vicious as the bees from the queen formerly in the hive, and whose removal was deemed advisable because her bees were so cross. Now, in this case, either the new lot of bees from the new queen learned to be naughty per force of example, or else the food partially digested in the glands of the original cross nurse-bees served to carry naughtiness to the new stock. We have sometimes thought bees learned good and bad tricks of each other. For instance, the *habit* of robbing *seems* to cling to a colony somewhat, even after a change of queens, and after the bees of the former queen are gone. We know that we can teach a colony to be cross by kicking a hive, using it roughly a few times. A runaway horse knocked over a couple of hives for us. Of course, they were cross at the time, but they were cross for weeks afterward, when, before the mishap, they had been well-behaved bees.]

OHIO'S APIARIAN EXHIBIT AT THE WORLD'S FAIR.

DR. MASON DESCRIBES IT.

Mr. Editor:—In accordance with your request I send you a description of the Ohio apiarian exhibit at the World's Fair. Those who have seen the exhibit will not need to be told how it looked; and the photo I sent you, although fairly good, does not show how it was arranged, so I will give a description of it.

I was informed by the chief of the department in which our exhibit was made, that the case in which honey and wax were to be displayed was 6 feet wide, 25 long, and 8 high, inside measure, and I made my plans accordingly. When I got to the place for the exhibit I found the case was only 4 feet and 4 inches wide and 7 feet high, so that the framework I had made at home was too large to go into the case, and the exposition company put two men at work on it to make it smaller, and it took them three days to do it.

The frames, or honey-stands, as we called them, were made of inch gas-pipe, 4 pieces on each side and one between at each end, making ten risers, or supports, in each stand. Each

support had a cast-iron bottom to rest in, and the tops were screwed into brass pieces that held them in place. On these supports were iron rests that could be fixed at desirable heights, on which were placed glass shelves on which to display both comb and extracted honey. There were two of these stands, each 4 feet wide at the bottom, 4 inches at the top, and 6 feet high. They were 8 feet long at the bottom, and about 5 feet at the top. One end of each of these honey-stands was placed about 22 inches from the ends of the case, leaving about 5 feet in the center between the inner ends of the stands. In the center of this space was an iron standard $6\frac{1}{2}$ feet high, with iron supports for nine glass shelves. The shelves were eight square, the lower one being about 3 feet across, and the upper one a foot across.

On this center pyramid were displayed comb and extracted honey, fancy pieces of beeswax, and about 30 varieties of honey-plant seeds—most of the seeds being furnished by A. I. Root; the rest were furnished by myself. The beeswax was part of about 40 lbs. produced and loaned to the exhibit by Mr. Milo George, of Bowling Green, Wood Co., and was admitted by all to be the finest wax on exhibition. It was just as it came from the solar extractor, not having been clarified in any way. It received an award.

The comb honey on the side of the pyramid shown in the picture was a portion of 100 lbs. in 96 one-pound sections, produced and loaned to the exhibit by Mr. Vernon Burt, of Mallet Creek, Medina Co., about three miles from Medina. The sections were well filled out to the wood, the 96 sections containing 100 lbs. of honey, the combs being even and white. They received an award. Mr. Burt also loaned to the exhibit a very fine strong colony of bees; most of the bees, however, were smothered on their journey.

The comb honey on the opposite side of pyramid from Mr. Burt's was a part of about 650 lbs. produced and loaned to the exhibit by Mr. C. E. Boyer, of Ainger, Williams Co. When I called on Ohio bee-keepers through GLEANINGS for honey, etc., for the exhibit, Mr. Boyer was the first to respond, with an offer to loan from 300 to 400 lbs. of comb honey, which he afterward increased to the amount before stated. The honey was in nice white four-piece sections, some of them being almost perfectly filled to the wood. Most of the comb was very white, and all was evenly capped, some of the sections being among the most perfect, if not the most perfect on exhibition. Most of the comb honey in the Ohio exhibit was from Mr. Boyer, and received an award. Evidently Mr. Boyer had "an eye" on the exposition, for I learned from him, when he was at the big show in October, that some of his honey was produced in 1891, and saved for the Ohio exhibit.

Mr. J. B. Wilhelm, of Saint Stephen, Seneca Co., donated a few pounds of comb honey—all he had when my call was made for honey. It was light-colored, and the sections were well filled.

Mr. Louis Schumm, of Willshire, Van Wert Co., loaned the exhibit 32 lbs. of dark comb honey in two-pound sections.

About 75 lbs. of white comb honey was purchased, and, all together, made about 900 lbs. for the exhibit.

Mr. F. J. M. Otto, of Sandusky, Erie Co., donated a few pounds of extracted honey, nicely candied in glass jars, that was produced in 1891.

In the front end of the case were three small pyramids of extracted honey, very light in color, and of fine quality. The center pyramid was 16 inches square at the base, 6 at the top, and about 3 feet high, surmounted by a glass

globe about 5 inches in diameter, filled with white candied honey, and labeled, "This pyramid of honey is part of 24 pounds, produced and donated to this exhibit by Samuel H. Bolton, of McComb, Hancock Co., Ohio."

In the right-hand corner was a smaller pyramid, labeled, "This pyramid is part of 120 pounds produced and loaned to this exhibit by C. E. Boyer, Ainger, Williams Co., Ohio."

The pyramid in the left-hand corner was of the same size as the last, and labeled, "The honey in this pyramid is part of 80 lbs., donated to this exhibit by Vernon Burt, Mallet Creek, Medina Co., Ohio."

On these pyramids were several small wax rabbits, made from Mr. George's beautiful beeswax. About forty of these wax rabbits were squatting down in different parts of the exhibit, and called forth many exclamations of pleasure from sight-seers, and not a few had "cheek" enough to ask for "just one as a souvenir." Several buckeyes, known to many as "horse-chestnuts," were also on these pyramids; and Ohio being the Buckeye State, and the buckeye being a honey-producing tree, made their display very appropriate.

In the center of the case, at each of the four corners of the square in which the large central pyramid before described stood, were four smaller pyramids of extracted honey, one of which was labeled, "The honey in this pyramid is part of 60 pounds, produced and loaned to this exhibit by Milo George, Bowling Green, Wood Co., Ohio." He also loaned the exhibit some samples of sweet clover and raspberry honey in Muth bottles.

Another of these pyramids was labeled, "This pyramid of honey is part of 60 pounds, produced and loaned to this exhibit by Mr. Lewis W. Hershisier, Fayette, Fulton Co., Ohio." Lewis is about 15 years old, and his honey received an award.

In the rear end of the case were two small pyramids of extracted aster honey in pound, half-pound, and dime Muth honey-bottles, all labeled with Mr. Muth's labels, and loaned to the exhibit by Chas. F. Muth, of Cincinnati, as was also another pyramid of honey in large Muth honey-bottles, placed in the center of the front honey-stand; and another pyramid of about 100 lbs. of beeswax, and some of Mr. Muth's honey with it, in the center of the rear honey-stand, all loaned by Mr. Muth for this exhibit.

A goodly number tasted of Mr. Muth's aster honey, and all were of the opinion that, if eaten on bread or warm biscuit, no butter would be needed, because the honey had such a buttery flavor. Mr. Muth had also on exhibition two bee-hives, two of his extractors, and two of his honey-knives. In the front end of the rear honey-stand was a good-sized pyramid of extracted honey, labeled, "This pyramid of honey is part of 100 pounds, loaned to this exhibit by Charles W. Frank, of Fairlawn, Summit Co., Ohio." It was a mixture of buckwheat and heartsease. It was a beautiful dark amber color.

Mr. C. Lamson, of Pierpont, Ashtabula Co., loaned the exhibit 24 lbs. of very nice extracted goldenrod honey. Unlike the honey from other sources, it did not candy.

In the back end of the case, between Mr. Muth's pyramids of honey, was a well-proportioned and nicely made monument of beeswax, about 30 inches high, made for and loaned to the exhibit by Mr. D. E. Jacobs, of Longley, Wood Co. When put in place last spring it was of good color; but standing where the morning sun shone upon it, it became somewhat bleached before the close of the exposition.

Miss Maria L. Deming, of Watertown, Washington Co., near the southeast corner of the State, loaned the exhibit about 40 lbs. of a

dark-colored honey that no one who tasted was able to tell what flowers it came from.

Mr. W. O. Titus, of Toledo, Lucas Co., loaned the exhibit about 50 lbs. of beeswax, a portion of which was shown at the rear end of the front honey-stand.

In the back end of the rear, and at the front end of the front honey-stands, were two pyramids of extracted honey in 2, 1, and $\frac{1}{2}$ pound and dime Muth honey-bottles, which I loaned to the exhibit. Some of the honey had candied and been drained, so that it looked very much

Nearly all of the comb honey was exhibited in crates with glass on both sides, holding but two sections each. The extracted, with the exception of that already mentioned as being in Muth bottles, was shown in a large variety of sizes and styles of glass jars, with either nickel or glass tops, and holding from one ounce to one gallon.

All of the shelves on which the display was made, and the pyramids built up with, were of glass.

For a few weeks I had a strong colony of Ital-



OHIO'S WORLD'S FAIR HONEY-EXHIBIT, WITH DR. A. B. MASON ON THE LEFT.

like sugar. Other portions were partially liquid and partially candied, much of it looking like very fine coral.

In the front end of the case were some honey-jumbles that were made in 1883, many barrels of which were sold in five and ten cent lots in the Apiarian Building at the Ohio Centennial at Columbus, O., in the autumn of 1883, by those in charge of A. I. Root's exhibit. I brought these from Columbus at the close of the Centennial. I gave several a taste of them at the World's Fair, and they said they were as fresh as new ones.

ian bees on exhibition in a nice glass hive. A colony of bees or a nucleus with a queen will attract more attention than any or all other things in an apiarian exhibit, especially if there is a bee-keeper to talk to visitors about them.

There were sixteen exhibitors from Ohio in the apiarian department, and eight awards were made on their exhibits, so far as heard from. I believe I have named them all, except that I received an award for "display of honey in marketable shape."

A. B. MASON.

Toledo, O., Nov. 4.

APIARIAN EXHIBITS AT THE WORLD'S FAIR.

DR. MASON DESCRIBES ROOT'S AND OTHER EXHIBITS.

Friend Root:—It is more than probable that the thousands of readers of GLEANINGS who have not been at the World's Fair would like to know something about your exhibit of supplies, etc.; and I doubt not there are a goodly number of those who read GLEANINGS who have been here and could not find your exhibit. I have met several such myself; and your own sister, Mrs. Holmes, came very near not finding it, although she had been within a few feet of it.

I was sitting on a box by the Ohio honey-exhibit, writing or figuring, and a little bit of woman, with two girls, brushed by me, and in a few minutes came back; and as they passed me again I heard the remark, "I guess Amos hasn't got any honey here. I don't see any with his name."

Hearing the name "Amos," which is quite a familiar one to me, I looked up and asked, "What are you looking for?" and, lo and behold! I had found a sister of A. I. Root, and two of his little nieces, or they had found me. I hardly know which. The "worse half," Mr. Holmes, was waiting down stairs, and it didn't take the little girls long to "raise" him, and then we had a good look at things, and a good but brief visit.

The honey-exhibits, and the exhibits of supplies, were in the gallery at the east end of Agricultural Building, in the south part of the gallery, and your exhibit at the south end of the honey-exhibits. When first put up last May by Dr. Miller, it was back in a corner by itself, where but few saw it, and so much was said (and fault found by your friends and bee-keepers) about its location, that, after considerable correspondence with Ernest, as Dr. Miller was to busy to attend to it, I came in July, and after three days of "wire-pulling" succeeded in getting permission from "the powers that be," to move the exhibit out in line with the honey-exhibits.

As put up by Dr. Miller, the exhibit was in a glass case 8 feet wide and 14 long, and about 7½ high. I have sent you a photo of the case and exhibit as it was after being moved. I made the case about two feet higher than it was at first, and put in the smaller glass as shown at the top, at the right and left ends, the front ones being removed for taking a photo. Making the case higher, and putting in the additional glass, made the case of about the same height as the honey-cases, and added much to its attractiveness. If I remember correctly, you tried to secure more space for your exhibit, but failed to get it, which will account for its smallness and crowded appearance.

When I moved the exhibit I "jayhawked," or took enough additional space to exhibit the extractors outside of and to the left of the case.

Perhaps the photo shows plainly enough what you had on exhibition; but a brief description, as I now call it to mind, may be of added interest.

Near the center may be seen a full-grown Dovetailed chaff hive, with the telescopic cover removed. A perforated zinc honey-board is held in an upright position in the back of the hive by two D. section-cases. I removed one of the frames and put a full sheet of foundation in it and placed it in a glass hive containing a strong colony of bees I had on exhibition. It was left then over night, and then placed as shown in the chaff hive, so as to show what the bees do with foundation. It attracted much at-

tention. A Crane smoker stands on the right back corner of the hive, and one on the left corner. In front of the chaff hive may be seen two dovetailed supers with section-holders filled with sections. One of the supers is placed bottom side up, so as to show its arrangement. These supers belong in the chaff hive. On these supers may be seen a Bingham and two Crane smokers, two A B C books, two sections of honey, Porter bee-escapes, foundation-fasteners, wire-imbedders, etc.

At my solicitation you sent a straw bee-hive, said to have come from Germany, and to be over a hundred years old. This is back of and above the chaff hive, and on it is one of your twenty-cent bee-hats and a bee-veil, and in front stands one of your "fixin's" to raise the quilt so bees can pass over the top-bars of the frames in winter.

At the right of the straw hive are two T supers with sections, one right side up and the other bottom side up, with some of the sections removed. At the right of these is a Miller feeder, large enough to cover the whole top of a hive.

In front of and below the feeder are some shipping-crates, with sections of honey in them; but I don't believe the honey was made by machinery, if it was produced at the "Home of the Honey-bees." At the left of and also below the shipping-crates, is shown brood and thin foundation; and below and in front of this are some Dovetailed hives with supers and section-holders, sections with starters, and separators, all complete; and on them are sections of honey, bee-escapes, queen-cell protectors, slate tablets, wire-imbedders, comb-fasteners, samples of thin foundation, etc. On the left front corner of the lowest right-hand hive hangs one of the most handy little honey-strainers I ever used; and on the right-hand corner hangs a neat pair of ladies' rubber gloves. Between these hives and the chaff hive are shown one of your large saw-mandrels, a Langdon non-swarm, or self-hiver (I don't know which it is, or whether it is either), a shipping-box, and smokers.

In front of and below the left T super is a Swiss wax-extractor, so arranged as to show all parts of it. At the left of and next to the chaff hive are shown Clark smokers, and small saw-mandrels, and above these a dovetailed super with section-holders and sections, starters and separators, all ready for business. At the left of these, and at the front, is another Dovetailed hive with super and gable cover, with a D. section-holder and a yucca brush on top. By the way, each of the D. section-holders shows a section of honey in front.

Above and back of this hive is one of your twelve-inch foundation-mills; above this a ten-inch mill with a sheet of foundation in front of it; and above and back of this is a six-inch mill for thin foundation. This also has a strip of foundation in front of it.

At the left of these, and in the front of the case, is a dovetailed winter case, with hive inside. The telescopic cover is removed so as to show the super, etc., and on it are some sections of comb honey. Back of and above this hive, I believe, is a ten-frame hive with super and a gable cover, and on this is another bee-hat and veil. If every bee-keeper had one of these hats, it seems to me he, or she, would never want to wear any other in the bee-yard in warm weather. They are light and cool. I have two old ones at home, and shall take the two shown in your case home with me, and then I'll have some nice clean ones for visitors.

Back of and at the right of the hat is an observatory hive with one frame, very neatly and substantially made. At the extreme left, at the bottom, may be seen three packages, compos-

ed of material in the flat, ready for shipment, for making five complete Dovetailed hives.

I had got this description written to here, while at the World's Fair; but I'm now writing at home; and had it not been for an accident, I should not have known what was hid away in the lower package. While your exhibit was being transferred from the place of exhibition to the warehouse, for shipment, several boxes fell from the wagon, and this package was broken open; and when I arrived upon the "scene," the teamster, with a ridiculously woe-begone face, was gathering up the fragments, and I could not help having a good laugh.

case hides it, stands a solar wax-extractor. It was the "innocent cause" of many either unfavorable or complimentary remarks; and it, or one of its ancestors, was the cause of my getting a sarcastic scoring by a maid—(I was going to say maiden lady), but I don't dare to, for she might *possibly* see this.

In the front part of the case, but out of sight for the same reason the wax-extractor is, is a Myers bucket brass spray-pump, with a long pipe extension, for sending a fine spray of water among a flying swarm of bees without unnecessarily wasting the water—said to be better and cheaper than a Whitman. In the same locality



A. I. ROOT'S EXHIBIT AT THE WORLD'S FAIR.

There on the ground lay parts of every thing that go to make up the inside of a hive-super, and all its internal arrangements. The two other pieces are the sides and ends of the hives. On these is a smoker, and back of it hangs some thin foundation. Above this is a shipping-case, and on it stands a super with a D. section-holder and a bee-brush in it.

In front of the package for hives, but out of sight in the picture, because the front of the

with the pump are some Crane and other smokers; foundation, bee-escapes, a nice chaff cushion, rubber gloves, and some of the best and smoothest sections I have ever seen, and they were taken from regular stock. On the back wall of the case is readily seen a large sign, printed on white muslin, such as I am told you fasten on each side of the freight cars you send loaded with supplies across the country. On this sign may be seen honey-knives, different styles of

wire-imbedders, feeders, foundation-fasteners, etc. At the right of the sign are circular saws and bee-brushes; and at the left, emery wheels and bee-brushes.

Above the sign, on the wall, but hidden from view in the picture by the strips of brood and thin foundation that hang from the top of the case, are all manner of the smaller supplies. Over the O's and the upper part of the T, in the word *Root*, may be seen a part of a large wire-cloth Manum swarming-device, the larger portion being hid from view by the hanging foundation.

On top of the case you can see, without telling, a sign; but unless I or some one else tells you, you would not know that the lettering and decorating were done with gold-leaf, the edges of the sign being nicely beveled, and also covered with gold-leaf. The black portion is very nicely covered with black, the whole sign being a credit to whoever made it.

On top of the sign, in a heavy gilt frame, covered with glass, is a very fine colored picture of the factory and some of its surroundings. In the lower left corner may be seen a freight-house where many of the supplies are loaded; and in the upper left corner, at the left of the tall chimney, is also another freight-house, on another railroad, built, I believe, on purpose for convenience in shipping supplies.

In the upper right-hand corner is shown the interior of the office, where the phonographs, shorthand and typewriters, and book-keepers are, and the brainwork done for the "Home of the Honey-bees." At the left of the office is shown the large water-tank that stands on the hill, at the front and right of the factory, about 35 rods away. This is filled by the windmill, and supplies the water at the factory. At the right of the picture, and just beyond the ever-green hedge, I can a-l-m-o-s-t see the residence of the proprietor. I believe it does show in the original.

There is a street in front of the factory; and if the cut were as perfect as the picture, there might be seen in the lower right corner a man, hose in hand, presumably the proprietor of the establishment, sprinkling the vegetable-plants that are in the hot-beds or cold-frames, in front of the hot-house.

The white spot on the lower part of the frame is a printed card that says, "The factory where these goods are made, located at Medina, Ohio; 36-page catalogue free on application." Several of these were in the case.

At the right front corner is a Cowan rapid two-frame reversible extractor. At the left corner is a Cowan improved four-frame reversible extractor that was the observed of all the bee-keeping observers who examined the exhibit, and, I believe, elicited as many comments as did all the rest of the exhibit. It was called a "daisy," a "dandy," and all sorts of endearing names; and the judge, Hon. Eugene Secor, thought its good qualities were so many that he awarded it a medal, a gold one, I presume. A Novice extractor also was on exhibition, but stands out of sight at the left of the case.

Just above the handle of the large extractor may be seen an oblong white spot. It is the side of a section that stands in a Daisy foundation-fastener. The fastener was frequently examined with interest by bee-keepers, and was sold to Mr. Wilcox, Superintendent of the Wisconsin honey-exhibit. The Cowan rapid extractor was sold to Mr. H. H. Emery, of Stoughton, Wis., and the ten-inch foundation-mill to Jas. A. Stone, of Bradfordtown, Ill., secretary of the State Bee-keepers' Association. In the top of the case, seemingly above the strips of foundation before referred to, but really nearly

three feet in front of them, hangs a strip of nice brood foundation, nearly twelve feet long.

On many of the articles in the exhibit may be seen small white oblong spots. These are printed cards, telling what the articles are, such as bee-hat, bee-veil, wire-imbedder, Dovetailed hive, etc. In the lower right and left hand corners are white spots, apparently part of the framework of the case, but really printed cards, which say, "Closed on Sunday." You will remember that, when it was decided that the fair was to be kept open on Sundays, we had some correspondence as to what it was best and right to do, you feeling that the best thing to do was to remove the exhibit. It came to me somehow that this was a good opportunity to "show your colors" and make a protest. This, I thought, could not be done if the exhibit were removed; but if left, and plainly labeled, "Closed on Sundays," and covered Saturday nights, and left so till Monday morning, the whole world would know just what it meant, and I so suggested to you. You thought my suggestion a good one, and requested me to carry out the idea. Accordingly, I purchased the muslin for a cover, here in Toledo, with enough to cover the Ohio honey-exhibit also, and our daughter Flora made the two covers, and I sent them by express to Mr. Jas. A. Stone, before referred to, with whom I had made previous arrangements to cover the two exhibits whenever I was not there, and they were covered every Saturday evening during the remainder of the fair.

I may say that the frames in all the hives were the thick-top-bar, self-spacing Hoffman, and that the hives and other supplies that would admit of it were nicely finished and varnished.

Besides the award on the Cowan extractor, the Crane smoker also received an award, and you received an award for display of bee-keepers' supplies. What these awards will be, whether medals or diplomas, I do not know.

Toledo, O., Nov. 13.

A. B. MASON.

RAMBLE 98.

IN THE SAN JACINTO VALLEY.

For a long time Mr. C. F. Simmons and myself had planned a trip into the San Jacinto Valley; and finally one morning late in September found us started on the journey. The distance we wished to make was 30 miles. Mr. S. furnished the outfit, and my recent experience with mules and pintos led me to make no



MR. SIMMONS AND I.

inquiries in relation to what I should be drawn by. The make-up of Mr. S.'s team was one tall lame black horse, the lame leg well bandaged with a white cloth, and one small bay horse.

The tall horse looked patronizingly over the neck of the small horse, and the latter looked up meekly to his big companion. The tall horse was to be taken to the luscious pastures of San Jacinto that the lame leg might heal and the horse be in trim for the fall plowing. Being a merciful man, the owner had to drive slow. With my Waterbury watch and a new lead-pencil I figured that we moved along at the velocity of two miles an hour. The roads were dusty, of course, and we took some of it into our respiratory and gastronomic organs; but it was very fine dust, and we realized no harm. Our gate enabled us to see the country under the most favorable circumstances. We could count the fence-posts with ease; and, while going past a watermelon-patch, I counted the whole crop, 310 melons, less two which we put into our wagon.



SABOBAN HOUSEKEEPERS.

At the young town of Moreno we struck the center of the valley, and could see the whole length of it, which must be over 30 miles; and this whole 30 miles, by an average of 5 miles in width, is more or less in grain-fields. The grain had been cut, and the immense combined header, thrasher, and sacker, had left the sacks in piles which could be seen as far as the eye could discern. After we had got well by Moreno we turned our horses' heads against a barley-stack, and proceeded to take our lunch.

A recent and untimely rain had spoiled the interior of this stack, and our horses were welcome to pick what good they could from it. We found the grain-producers in bad straits, and complaining bitterly of hard times and low prices. Good barley was selling for 50 cents and even less, per sack, and barley hay for \$5.00 per ton. A few who had taken land to sow on shares had not enough to pay their expenses,

and the products of whole grain-fields were put under attachment and the sheriff's hammer.

An hour's rest enabled us to push forward again with the same rapidity as before; and late in the evening we arrived at our journey's end—the residence of Mr. H. T. Hallock. Mr. Hallock is an enthusiastic bee-keeper, and has a fine fruit-ranch to occupy his attention while not at work with his apiary of over 100 colonies. Mrs. Hallock is also an enthusiastic worker at whatever she finds for her hands to do. The previous night she had driven alone nearly all night to Riverside, 30 miles, with a load of prunes, and reached home again after we had retired for the night.

When we consider that this frail woman came here a few years ago so bad with the asthma that her friends despaired of her ever recovering, we realize the benefits of this particular climate. The next day being Sunday, and our new friends being God-fearing Congregationalists, we all attended church, and were duly edified from the Scriptures. Our rapid drive the previous day left my traveling companion with a severe headache, and he thought nothing but a good bath at one of the sulphur springs would help him; and, sure enough, after the bath and attendant sweat, the cobwebs were all cleared out of his head. The hot springs boil out here in three different places. The springs nearest town have a swimming-pool; the next, three miles below, have mud baths, and are named Relief Springs. Several miles below are the Eden Springs, a sort of free-for-all resort and camping-place.

Mr. Dustin lives just above Relief Springs, where his apiary presents much the same appearance as upon page 512, GLEANINGS for 1892. We were disappointed to find him absent.

I was pleased to meet Mr. H. I. Morse, also mentioned by the senior editor in 1892. Mr. M. is another successful bee-keeper, a man of a family, and having several irons besides bee-keeping in the furnace of business.

Limited time prevented me from accepting Mr. Morse's offer to take me around amongst the bee-keepers, who are plentiful in the valley. Mr. M. thought he could find a good location, and that the Rambler would fit well into the San Jacinto Valley (remember what I said in the last ramble about old Californians giving you a desire to settle near them). To Vale Vista, Mr. Simmons and I journeyed. Here Mr. S. owns a pretty fruit-ranch, and formerly owned a bee-ranch. The latter is, however, now in the hands of another man, and his yield of honey was only about a ton from 100 colonies. This was a light yield as compared with his neighbors, who had obtained from 5 to 8 tons from an equal number of colonies. The yield throughout the valley, however, was not what we can call bountiful. The honey flora seems to be quite extensive, with a great preponderance of white sage; but it seems that, during

the past season, the black-sage localities have gotten away with the big yields of honey; and it is my private opinion, publicly expressed, that black sage is the better honey-plant of the two. Atmospheric conditions in the valley might have had an influence upon the secretion of nectar, as it surely did in many other localities.

It was with much pleasure that I again met my bachelor friend Henry Otto. He happened to come to town from his bee and fruit ranch, just in time for us to have a hand-shake and a talk about bees and honey. Mr. Otto has practiced dividing his colonies for increase, to a considerable extent, and has learned some valuable lessons thereby. I believe he divided three times in one season. He learned that two of the times was too much, and he now contents himself with one division, and makes a success of it. Nearer the coast, division can be made several times during a good season; but back here in the mountains such operations have to be conducted with care.

There was some complaint about there being too many apiaries for the pasturage; still, Mr. Simmons was of the opinion that there were several good openings for the profitable establishment of apiaries, and one good range near the Saboba Indian reservation he was inclined to think would be a good place for the Rambler to settle; and he thought that, if I could not secure a housekeeper anywhere else, I could probably find one here. As I have a very good photo of the healthful make-up of the dames who live in these villages I herewith present it. So far as robustness is concerned there is no fault to find; but as I have seen the methods of cooking performed by such dames as these, I believe I prefer to stick to my own old flap-jack griddle a little longer. Good-by, Sabobans.

Some bee-keepers in these parts seem to think that, if bees are brought down from the mountains, they work with more energy in the valley for a season or two than if kept all the while in the valley. I think, however, that the change of location, even from one portion of the valley to another, would give them just as much of an impetus to work. The plan can be tried here to the fullest extent, for there are bee-keepers quite well up in the mountains. A Mr. Saulsbury has such an apiary. He collects his bees from the rocks. With a burro, a few boxes and

adjoining canyons, are many thriving apiaries which the Rambler has resolved some time to visit.

To the lover of timber lands the head waters of the San Jacinto River offer some attractions, for here the cottonwood grows with vigor; it is, however, only on the bottom lands. Just as soon as we step up on to the hills they are barren save for the sage and other brush growth. The lovely wild sunflower was out in its glory. It remains in blossom many weeks, during which the bee works it with vigor. Alfalfa is also grown here for hay and pasturage, and yields up a revenue to the bees. Artesian wells supply the purest of water, and all kinds of fruits grow here except oranges and other tender tropical fruits; and there is no reason why that, in time, San Jacinto Valley should not support a large population. The fruit and honey interests live happily together here. The fruit-producer evidently looks upon the bee as his friend and helper; and where such enlightened views prevail, there is harmony.

Mr. Simmons and I were to start upon our return early the next morning. Mr. S. had gone into a speculation, and purchased 100 dozen eggs for the Redlands market. We also had a fresh horse, just a match for our pony, and we expected to get over the ground at a great rate. When we were ready to start, Mrs. Hallock loaded us with fine specimens of peaches and prunes. The aged mother came to the door and gave us her blessing, and said, in solemn tones, "Now, Mr. Rambler, take the advice of an aged woman, and get you a good wife, and live no more the life of a lone bachelor." I promised to consider her advice, and have spent several wakeful nights over it; and, not seeing my way clear to commit such a stupendous deed, I seriously think of retiring into some wild fastness and live the unmolested life of a hermit bachelor.

After we had journeyed homeward several miles I realized that we were getting over the ground with our better team at the rapid rate of two and a half miles per hour, which was a decided improvement over our outward journey. Mr. Simmons, I will bear record, is a careful driver. His wife also says she wouldn't be afraid to ride with him right over the top of San Jacinto Mountain. Such implicit confidence in a man, by his wife, I have not seen for many days; and now, when thinking of the contemplated hermit act, glimmerings of repentance come over the

RAMBLER.

HONEY-PLANTS OF DIFFERENT LOCALITIES.

THEIR OFF YEARS, ETC.

My experience includes eight seasons in Iowa, two in Wisconsin, one in Colorado, and one in this State. The principal honey-plants in Iowa are white clover and basswood; in Wisconsin there is much basswood, but in my location there was white clover only; in Colorado, alfalfa and sweet clover; and here, white and black sage and several other plants of only secondary account. Take these five plants from the list of honey-yielders, and the industry of bee-keeping will come to a sudden and sure end in those States.

There are none of them but have what may be termed "off" years, when the atmospheric conditions are unfavorable for the secretion of nectar. The cause of such unfavorable conditions no one has, as yet, been able to explain. In Iowa, in the fall, three months or so after the first blossoming of clover, there comes on what is called a second crop; and while the pastures and roadsides may become nearly as white as



GETTING BEES FROM THE MOUNTAINS, ON A BURRO.

gunny sacks, he spends the day in securing the bees, and coming in at night with the burro well loaded with the bees, which are then run into hives. The disadvantage surrounding these mountain apiaries is their almost inaccessible position; and the valleys offer the accessible inducements for the location of apiaries in them; and in Diamond Valley, San Ignacio, and

snow, I never knew this bloom to yield enough honey to show in the combs. Why should not this crop of bloom yield honey as well as the first? With this second crop, every season appears to be an "off" season; and the time appears to have come when off years are getting to be more the rule than the exception with our main honey-plants.

Alfalfa has done very poorly in Colorado for the two past seasons. Last year, in well-managed apiaries, the yield was about 30 lbs. per colony; and by reports, I judge that this year it has been still less. Previous to 1892 there were several seasons in which the yield per hive ranged anywhere from 120 to 200 lbs., nearly all from alfalfa. Alfalfa, as compared with the other five honey-yielders I have mentioned, may stand first, excepting basswood. I have never known an entire failure with the basswoods. Cloudy and cold days and dry weather may come; but if there comes only one or two days' gathering from it, we always get some honey. White clover comes into bloom a week or two earlier than basswood; and, though it may not yield a surplus, the bees manage to get enough to live, and patch and prepare the combs so that what basswood gives can be seen.

Poor honey seasons in California are caused by insufficient rain in the winter season to make the sages grow. Some very favorable things we have here are weeks and months of perfectly cloudless days, such that the bees can fly in search of honey every day. In Iowa, pleasant sunny days are scarce—sometimes being cloudy and chilly through nearly all the clover and basswood blooms. Then, again, it may be so dry through the spring that clover is dried up.

In Colorado the weather is between that of Iowa and California—much sunshine, and some clouds and rain. If there were no rain at all it would not affect alfalfa, as it depends upon irrigation. For this reason alfalfa ought to be a pretty sure honey-yielder. Failure may be largely due to its being mowed before it comes into bloom. Clover blooms for some considerable time before the bees get much honey from it—so long, in fact, that the inexperienced may conclude that it is not going to yield at all. In this respect, alfalfa seems to imitate clover. In California, alfalfa is mowed even closer and oftener than in Colorado; and, while its scarcity of heads which escape the mower and sickle tend to lessen the yield, the weather and atmosphere are nearly always favorable. California alfalfa honey is much darker than Colorado alfalfa—about like Iowa heartsease—light amber. It also has a correspondingly strong flavor. In Colorado it is nearly the quality of basswood (Colorado bee-keepers think it surpasses basswood in color and flavor); but I have failed to think that it *surpasses* basswood.

One thing which these western honeys have to their advantage to give them light color and mild flavor is the light sandy soil upon which they grow. Heavy rich soil produces darker, stronger honey, even in the case of basswood-trees. I have kept an apiary on each kind of land at the same time, so as to make this comparison.

I see the report that mountain honey is richer than valley honey. My appetite seems to indicate the reverse, for, the higher in the mountains I find it, the more I can eat, to the extent of nearly making a meal of it; and I have sampled it from bee-trees on the highest mountains in the middle of the San Bernardino range. There were three grades found, the darkest, being a very little lighter in color and milder in flavor than pure buckwheat. The different colors were placed in well-separated positions in the combs, which might indicate three periods of the gathering. The light col-

ored was stored earliest in the season, and the dark later—just three kinds, and not an ounce of any other. This tree was located near the "timber-line," much higher than and several miles distant from where sage grows; and the lightest honey was nearer a water color than any sage honey I have seen. In the immediate vicinity I found growing manzanita, white-thorn, buckthorn, yucca, and a peculiar kind of oak which the bees work upon a great deal for honey-dew. I think the white honey came from whitethorn, as I have never seen that kind of honey anywhere else, and as whitethorn grows only on the tops of the highest mountains. The dark honey may have come from yucca, although all the plants I mention, and several others that were new to me, are honey-yielders.

California is a marvelous country in that nearly every tree, shrub, and weed is a honey-yielder, and which may be numbered almost by the hundred. Yet none but sage furnishes a surplus to compare with clover, basswood, or alfalfa. Wild alfalfa, wild buckwheat, alfalaree, burr-clover, sumac, oranges, and beans are about equal to buckwheat, heartsease, and the yellow weeds that grow along the fences in Iowa. Sage growth is entirely dependent upon the moisture of the rainy season; yet when we go up a mountain from the sun side and cross over the summit we find no sage on the shaded side. Nor does sage grow to the tops unless the mountains are very low; and the idea that the bees first work upon the bloom in the low lands and continue up the mountains, thus lengthening out the harvest, is easily exploded. The sage on the scorched mountain-side is shriveled up and dead before that in the valley.

C. W. DAYTON.

Pasadena, Cal., Nov. 25, 1893.

TWO QUEENS IN ONE HIVE.

THE PLAN NOT A SUCCESS ACCORDING TO THE EXPERIMENTS OF S. CORNEIL.

During the past two or three years the *British Bee Journal* has been full of what is, in England, called the "Wells plan." Mr. Wells puts two colonies into the same hive in the fall. They are separated by a wooden division-board about three-sixteenths of an inch thick, perforated with holes a little too small to allow a bee to pass through. The perforations are about half an inch apart. The bees use the same entrance, the members of each family taking their own side of the division-board.

At the beginning of the honey-flow, in the following summer, queen-excluding zinc is placed over the frames, and surplus chambers are put on in which the bees of both colonies work in common, without fighting, and, I believe, without the loss of many queens. The amount of surplus obtained is regarded as the produce of one hive; and when compared with the surplus stored by a colony having only one queen, is, as might be expected, larger; but I do not recollect seeing any evidence that it is more than twice as large.

As I use the closed-end Quinby frames, all I needed to give the plan a trial was the perforated division-board; so in the summer of 1892 I arranged eight colonies in four pairs on the above plan. After leaving them about a week, to get the same scent, I put sections on two of the double stocks, and the other two I ran for extracted honey. There was no fighting, but in 12 days the perforations in the division-boards were mostly filled with propolis. Those worked for comb honey swarmed early, both colonies at the same time, and then they sulked and gave me little profit. I gave eight

combs, 10x16 inches, inside measure, to each of the colonies run for extracted honey, for a brood-nest, and over the queen-excluders I placed 2 stories of 16 combs each, making 48 combs in all. These colonies seemed to do pretty well for a while; but on examination I found three out of the four queens missing, although there had been no swarming.

Having taken the notion to run two families side by side, I started about 20 nuclei at the side of as many populous colonies; but instead of using the perforated division-boards I used thin solid boards, having two rows of perforated queen-excluding metal at the bottom, a strip of the metal being tacked on each side of the wood to keep the queens from "touching noses." The queen-cells hatched all right enough; and as the bees had their own entrance in a different direction from that used by the bees of the main hive, I expected to have the young queens successfully fertilized; but before the time came, when they might be expected to be laying, they mysteriously disappeared—killed, as I supposed, by the bees of the main hive.

My son and I decided, on finding our queens all gone, that working bees on the twin-hive principle would not pay us; so we separated our colonies, and have not tried it since.

From the experience I have had I would advise bee-keepers not to risk too much in working two queens in one hive.

Lindsay, Ont., Nov. 27.

S. CORNEIL.

[We are very glad to get this report just at this time. It confirms the majority of reports we had some time ago; and yet, if there are conditions under which two queens *can* be made to live in one hive, and give twice the amount of brood and bees, we should like to know what they are. Mr. Cornell's closing caution is no doubt a wise one.]

KEEPING TWO QUEENS IN A HIVE.

SOMETIMES ADVISABLE AND SOMETIMES NOT.

As you invite contributions on the subject, "Keeping two queens in one hive," found on page 844, Nov. 15, I send you a few lines stating a little of my experience, or the conclusions I have come to. I think there is no bee-keeper who has run 20 or more hives of bees a year or two for extracted honey, with queen-excluding honey-board, and fly-hole in top chamber, but knows that two queens can be kept or reared in one hive; and that, let it (the extra chamber) be at the back of a hive or the side or on top, the principle is the same. I have kept bees for over 20 years; but not until I made a specialty (about eight years ago) of extracted honey did I find a young queen laying in the super, with the old lady doing the same on the lower flat; but as a producer of extracted honey I did not see any use in having a laying queen upstairs; so, if appearances were favorable, I started a new colony with her, and a frame of the bees and brood; if not, her head was pinched. So I agree with Mr. Golden, that the knowledge of being able to have two laying queens in one colony is old, and hundreds of bee-keepers must have known it for years, and have made use of the knowledge. When practical, it is a very convenient way to supersede a queen at times. But I think the percentage of loss in queen-cells and young queens is greater in this way than by the nucleus plan.

W. HARMER.

Manistee, Mich., Nov. 27.

[Yes, we knew the idea of keeping two queens in a hive was old, and intimated as much on page 843. Some old ideas are good, but for

some reason not as much is made of them as there should be. We desire to know not only more about how two queens may be kept in one colony, but also when a plurality of queens may be of service. We are much obliged for the facts you have given us. Whom shall we hear from next on these points?]

BEGINNER'S QUESTION-BOX.

ANSWERS BY E. R. ROOT.

L. A. W., of O., would like to know whether the outdoor-packed colonies should have full-width entrances. *Ans.*—Yes; and be sure they are kept clear of any dead bees that may lodge.

E. W. P., of Mass., has discovered that several of his colonies are queenless, and would like to know whether it would be advisable to send off and get queens and introduce them. *Ans.*—At this time of year we believe we would advise letting the bees alone until next spring. When the bees begin to fly they ought to have a queen introduced.

J. M. C., of N. Y., writes that his bees in the cellar are flying out of their hives, and dying on the cellar bottom. *Ans.*—Perhaps your cellar is too warm. In this case give ventilation but not light. We should not, however, worry over them. They are generally old bees that are too old or diseased to stay in the hive. For the health of the occupants above the room, as well as for the bees, we would keep the floor swept up. Do not be alarmed if you take out half a peck of bees at a time in a cellar containing 25 or 30 colonies.

M. A. B., of Penn., has a large family of small children that play and romp on a floor under which is a cellar containing some 35 or 40 colonies of bees. He would like to know whether the general noise and disturbance will do any harm. *Ans.*—In scores of instances of this kind we do not remember to have seen any reports showing bad results following from such disturbance above. We have wintered bees in a cellar for three winters, under the living-room; and while they were in the cellar we have not discovered that romping or walking, on the part of children or adults, did any harm.

M. J. R., of Minn., writes that the snow has piled up around the entrances of his hives, and he inquires whether there is danger of the bees smothering by leaving them so. *Ans.*—If the snow is light and not soggy, we would let it be. A general thaw, followed by a freeze, may close up some of the entrances, and it is possible that it should be cleared away. But ordinarily, if the colonies have absorbents such as big chaff cushions over the frames, we would let them alone. They will get enough air through the cushion; so we think there will be no danger of their smothering.

L. M. B., of La., says sugar is expensive, but New Orleans molasses is cheap. Would it be safe to feed the latter? *Ans.*—In your climate we should not be afraid to risk it, as we assume that the bees will have opportunity for occasional flights. The best sugar stores are not necessary, except in the extreme North; and even then the bees winter well on buckwheat honey, cheap molasses, and other inferior sweets. But here in the North, granulated-sugar syrup, as it contains so large an amount of sweet for the money, is about as cheap as any thing that can be given to the bees.

F. C. F., of Wis., is rather hard up for money this year, and can not afford winter cases or

chaff hives. He has a wet cellar, and also a garret. Where would it be best to put the bees? *Ans.*—A garret is a poor place at best. We have known of scarcely any good results in wintering bees in such a place. We would risk the damp cellar. But, friend F., for the health of your family, if not for the health of your bees, drain that cellar out as soon as possible. If the bees do not have dysentery, your children may have typhoid fever, diphtheria, and all the other bad ailments resulting from a wet cellar.

N. E. J., of Ohio, says his bees are flying out upon the snow, and dying by the hundreds, on warm, bright days. He desires to know the cause, and how the trouble can be stopped. *Ans.*—Bright sunshine will, many times, call out the old and diseased bees. It may also draw out a few others. But generally we consider that these old bees might just as well be out of the colony as not; and if they are to die soon they had better die with their carcasses outside. But even if some young bees do fly out with the rest, the loss is generally so small as hardly to be worth considering. A bee here and there means a very small number from individual colonies in a large apiary.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

BIG RESULTS IN HONEY, BY THE "SMALL FRY."

I see by GLEANINGS you like to hear from the small fry, so I thought I would tell you what I have done the past season. I commenced with 47 colonies in single-story hives, 8 frames, and got $4\frac{1}{2}$ barrels of extracted honey, and increased to 151. Fifty-seven are in double-story, the rest in single-story. I took five colonies in 10-frame hives, and raised my queens at home. When I divided or built a nucleus I always had a queen ready; and from the 5 colonies I increased to 33 all in first-class condition, with plenty of honey. I worked two out-apiaries—one of 100 colonies. I took 15 barrels; the other, 67, spring count, 12 barrels of extracted honey; increased to 93. We have a fine honey county here—never a failure, so the oldest bee-keepers say. All our honey-producing flowers are from forest-trees, wild grape and other large vines, excepting fall honey, which is from goldenrod, heartsease, and wild aster. I have gone into winter quarters with 187 colonies, all in first-class condition, with plenty of honey to pull through. They have only from 3 to 4 months' rest here.

If I am spared I am going to take 10 good colonies and put them in a good locality, and increase to 100. I think I shall have no trouble by raising my queens at home, and always have one ready. I shall try it, and report through GLEANINGS another fall.

Wrights, Miss., Nov. 19. J. H. SEPLES.

ROOT'S PERFORATED ZINC ALL RIGHT AS IT IS; PERFORATIONS SHOULD NOT BE NARROWER.

As you call for reports from those who have tried your latest zinc, I will tell you what I know about it. I have used it between the upper and lower hives; have had hundreds of queen-cells built above it; have had them hatch and get to laying above it, all with the old queens below, and have never had one go through it. I have also used it one other way; and if it were possible for queens to go through it under any circumstances they would have gone through under this. In the early part of

the fall we (Cleveland Bros.) had a number of nucleus hives with bees in them that were good for nothing but to swarm out once or twice every pretty day. These hives had a strip of your zinc over the entrances; and when the bees swarmed out of them the queens could be seen running their heads through the perforations; but in every case they had to remain lonely prisoners until the bees returned. Please don't make the perforations smaller, but make the queen larger. While looking at the queens trying to get through the strips of zinc on the nucleus hives, I observed that they could do no more than just get their heads through the perforations; so it will be seen that it is a queen's shoulders that prevent her from going through, and not the abdomen, as many think.

JAMES CLEVELAND.

Decatur, Miss., Nov. 18.

[Thanks for your testimony; let's have more.]

QUEENS GOING THROUGH ZINC.

Replying to your request in a recent number of GLEANINGS for reports of queen-excluding zinc, I have to say that, of 65 hives on which the zinc is used, two queens found their way through. About the same proportion last year. I would not have the openings any smaller. I think them about right. I would rather a queen would now and then go through than have the workers troubled in passing. The zinc used came from your shop. I have used the Chicago zinc, and it excludes altogether too much.

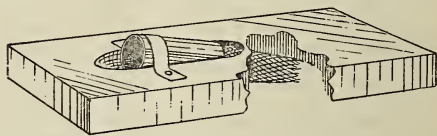
C. H. LONGSTREET.

Mount Dora, Fla., Nov. 22.

[Your experience with the Chicago zinc with perforation $\frac{165}{1000}$ is exactly ours. Probably the $\frac{165}{1000}$ size is as near right as any thing can be, under the circumstances.]

A HORIZONTAL CONE BEE-ESCAPE.

I send you by mail to-day my new bee-escape which I devised. They work very nicely with



me. The block is to represent a honey-board.

ALFRED FERGUSON.

Guilderland Center, N. Y., Nov. 2.

[We see no reason why this escape should not work nicely. We will explain to our readers, that the end of the cone, as shown in the part of the block broken away, is tapered down so as to just barely let through a bee. The wire cloth at this point, as will be noticed, is frayed out, leaving sharp points to intercept bees going the wrong way. We should like friend Ferguson to tell how the principle works in practice.]

HOFFMAN FRAMES WITH STRAIGHT TOP-BARS AND V EDGES PREFERRED.

I see on page 845, Nov. 15, Dr. C. C. Miller speaks of self-spacing frames and dummies. I have not had experience with bees and hives as long as Doctor M. has, but may be I can give him some suggestions regarding the Hoffman frame and hive. The hive I use is a little different from others. It is $12\frac{1}{4} \times 19\frac{1}{2}$ inside. I do not rabbet the ends of the hive, as I nail on a separate $\frac{3}{4}$ board the full width of hive, and reaching to the bottom-board. On this I nail the tin rabbet. I use the straight top-bars

and wide end-bars. I would not use frames with top-bars widened at the ends. They are bee-killers. *There is no better frame than the Hoffman straight tops, with wide ends, one side V'd, the other square.*

Lexington, Ky. W. L. RICHMOND.

THOSE "EVERLASTING FOOTNOTES;" WHAT DR. MILLER THINKS OF THEM.

Speaking of footnotes, I have a word to say. Don't you be browbeaten out of their use by any thing that may be said. Footnotes give light and a vivacity that nothing else does. They are just a little in the line of conversation. They are especially useful in confirming what is true, as well as throwing in a caution against the false, if any such thing is needed. The orthodox way is to leave the article without comment; and then, if the editor has any thing to say about it, to say it in an editorial. That's a bungling way at best; and if the editorial is read first, the reader is in the dark; and if the editorial is read last, he must turn back to see what it's all about. Footnotes, the "everlasting footnotes," as some one called them, have been a striking feature, and a strong feature, in GLEANINGS. Don't go back on them. They helped make GLEANINGS what it is. Stick to them. If occasionally dissenting views are given by "E. R." and "A. I.," so much the better. GLEANINGS is a splendid journal without the footnotes, and with them it is * * * C. C. MILLER.

Marengo, Ill., Nov. 27.

[We leave off the last part of the last sentence, through extreme modesty; therefore the reader may finish it to suit himself. After what had been said we have had a sort of feeling that *perhaps* footnotes were not really desirable. However, we have kept on using them, and have tried to make them just what Dr. M. says they are. How is it, reader? shall we continue to use them?]

ALFALFA, AND ITS IMPORTANCE AS A HONEY-PLANT.

Could you give me any information as to the yield of honey from alfalfa clover? What success do bee-keepers have with alfalfa, where irrigation is carried on—that is, where alfalfa is about the only honey-source?

Riceford, Minn. G. A. LUNDE.

[Alfalfa is one of the most wonderful honey-plants in the world, and bee-keepers in the vicinity of this plant have had more *uniform* success than elsewhere. You will find a very full account of alfalfa, its cultivation, how irrigated, the quality and quantity of its honey, in GLEANINGS for Nov. 15, 1889, page 887.]

NON-SPLITABLE HIVE-COVERS OF PULP WOOD.

Why wouldn't it be practical to get hive-covers non-splitable, made of the material of which the fiber water-pails are made? The pails are very low in price, and a thin straight slab ought to be cheaper. You should be able to find some way of working sawdust into them.

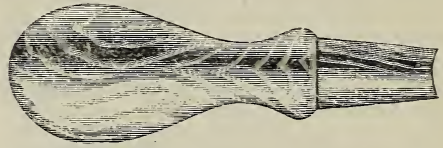
J. C. BENNETT.

Emmetsburg, Iowa, Dec. 6.

[While the wood pulp pails are cheap, they cost twice as much as the regular wooden pails. We can buy slabs of wood pulp large enough for hive-covers, but no one would want to pay the price for hives with such covers. While wood pulp is used for water-pails, and, indeed, answers nicely, it is never, if we are correct, used for outside work on houses, though it is frequently used for inside finishing. We hardly think it would stand the weather.]

A NAIL-PUSH.

This is a full-sized cut of a hard-wood handle which I use for pushing tacks and small wire



nails into hives to prevent jarring. It can be carried in the pocket, and is handy in many ways.

I find that second swarms put on four frames in a hive, with a division-board in the middle, will build nicer combs than putting them in a hive with a full set of combs. After a week or ten days, put two such swarms into one hive and they make a nice swarm. Kill one queen.

I smoked a nest of bumble-bees with your Crane smoker, and the workers left for the fields; and what appeared to be queens ran around in the grass, and would not leave. Are there queens and workers like honey-bees?

Columbus, Wis., Nov. 18. SUPER LIFTER.

[We have no doubt that the tack-pusher would work nicely. Several years ago, when we used to put up bees in pound packages, we always pushed the tacks through the wire cloth into the wood, instead of using a hammer. Bumble-bees have a queen and drones the same as other bees. In a normal condition we doubt whether a nest contains more than one queen.]

LADIES' CONVERSAZIONE.

BRACE AND BURR COMBS.

ELISHA GALLUP: THREE-DAYS' SESSIONS AT CONVENTIONS.

We have always used the eight-frame Langstroth hive, made exactly after the directions of the inventor in his great work, "On the Hive and Honey-bee." A few years since I asked my husband what bee-keepers meant by brace and burr combs. I think that, if bee-culturists had followed in father Langstroth's footsteps closely, and had fixed frames, with only a bee-space between them and the honey-board, they would have remained as ignorant as myself as to what they are.

In looking at the picture of this old white-haired veteran, with his little ones, I called to mind an old hen that stole her nest and brought out a flock of downy chicks in October. A baby two years old and its father 73 seems as one born out of season.

I do not approve of calling a three-days' session and holding only two. Why would it not be well to call for a two-days' session and hold the first one at night, before the first day, as many would arrive the day previous? Many stopping at the Louisiana Hotel would have enjoyed having the opening session at night.

It was six degrees below zero the last of November; and to day, Dec. 4, there is a foot of snow on the ground.

Peoria, Ill., Dec. 4. Mrs. L. HARRISON.

[Bee-spaces alone, according to reports and our own experience, prevent burr or brace combs. Width of top-bar certainly is important, and thickness has something to do in maintaining bee-spaces.]

OURSELVES AND OUR NEIGHBORS.

Let us not be weary in well doing; for in due season we shall reap if we faint not.—GAL. 6:9.

My talk this time is going to be a good deal to the boys; but I think it may prove helpful to girls too, and some boys and girls who are pretty well along in years as well. Perhaps I shall put a different construction on my well-known text from the one generally used; but I think you will all agree that it is an exceedingly practical one. It has suggested itself to me because, just before the coming winter, so many are wanting employment, and so many are out of employment. The question is continually coming up, "Why is it that farmers and manufacturers, and other people who sometimes employ help, and who might employ help, can not do any thing for the needy ones?" I shall not undertake to give all the reasons, but I think I can give one very plain reason, and one that will do us all good; and this reason is, that so many, in the language of our text, get weary in well doing—at least, they become uneasy, and grow tired when they are doing fairly well. A great many people in this world can not let well enough alone. It seems to me a great many people are dissatisfied and restless, when they ought to be thankful and happy. And right here comes in this tendency to think you are of more value to the world than the world is willing to pay you. This attitude of heart is a very bad one, and I think it is one of Satan's biggest pieces of machinery to get people into trouble. He whispers to a farmer who is doing fairly well, "Look here, my friend; you know, and everybody else knows, that a farmer never gets rich. A man of your ability and intelligence ought to be doing something else. I would not stay here and drudge for anybody." After Satan has got a listener to go thus far, the way is pretty well paved for some oily-tongued patent-right man or agent for Bohemian oats, or some lottery or gift enterprise, or some scheme to get the upper hand of your neighbors.

I suppose boys can be considered somewhat excusable if they do fret, and get an idea that they ought to have a man's wages before they are out of their teens. But sometimes boys learn wholesome lessons, even in their teens. Let me tell you of one boy I know of. He came to work for us when he was perhaps 15 or 16 years old. He was steady and industrious, did not stop to play, even though others were playing and cutting up around him; and, as a consequence, his wages were steadily advanced—that is, once in six months or a year he would get a cent or two more per hour. After he had been with us for perhaps a couple of years, our engineer mentioned that F. was considerably interested in the engine and boiler, and suggested that he take him under instruction if I didn't object. Of course, I assented, and he seemed to enjoy the hours he spent with the engineer, and was making good progress. After he had been at work a sufficient time he was allowed to look after the engine for short intervals while the engineer tended to something that was some distance away. About this time some of the older and wiser heads of the different rooms of the establishment suggested to me that the boy was hardly old enough to be trusted with so much responsibility—too many lives and too much property were at stake. I assented, and recommended that the engineer had better not be out of sight, and that F. should not have too much responsibility thrown upon him, even though he did seem to be unusually wise and careful. Things went on in this way until

F. was 17 or 18 years old. He assisted while cleaning the boilers, and sometimes got up at two or three o'clock in the morning in order to do this. I found out, however, by his time-card, which I inspected every Saturday night, that, after getting up this early Monday mornings, he was in the habit of putting in a full day's work during the day, thus making 13 or 14 hours of labor for a boy in his teens. It may be well to mention right here that the State of Ohio has enacted a law, a part of which reads as follows:

The number of hours of labor required of minors, under the age of eighteen years, employed in this room, shall in no case exceed ten in any one day.

I spoke to F. about it, and I spoke to his father about it, telling them it was not best. I suggested that, when it was necessary to get up so early and help the engineer Monday mornings, he ought to stop work early in the afternoon so as to make up on Monday night for his lack of sleep Sunday night. However, he did not seem to think there was any need of caution—he was stout and well, and he thought it would not do any harm; and as he was over 18, if I am correct, he was not really transgressing the letter of the law. Our engineer has for some time been in the habit of shutting off the steam from the glass gauges that indicate the amount of water in the boiler, just as he leaves at night. The first thing he does in the morning is, of course, to open the valves connecting the glass gauges, so that they may once more indicate correctly the height of the water in the boilers. His reasons for doing this are, that these glass gauges sometimes break, even in the night, when nothing touches them—at least, it is said they sometimes break in this way. I have never known such a thing to happen in my own experience, and I confess I am a little incredulous. If a door should be opened, letting a cold blast strike the hot glass, I can understand that it might possibly break; but I can not understand how these heavy glass tubes should break thus, when the engine-rooms are perfectly closed, so that no circulation or draft can affect the temperature. No matter. He thinks it best to do this way. It seems that this boy had been instructed to fire up just before starting the engine; and when he commenced firing he was also in the habit of opening the valves to the glass gauges. One morning, by some absent-mindedness or something else, he opened the valve to one of the boilers and not to the other. The engineer glanced up when he came, and noticed that both boilers had just the proper quantity of water. In a little time the water began to sink in one boiler, and he started the pump. As the other boiler seemed to have plenty, he did not start the pump; then he began to think it singular that that special boiler was using up no water at all. Had he then turned on the water without investigating, our whole establishment would probably have been blown up, and perhaps several lives lost. He tried both valves to the glass gauges, and found the first all right, but was startled to find the second had not been opened at all, and the water was out of sight instantly, as soon as he moved it. Like a wise and experienced man as he is, he drew the fire as quickly as possible, and investigation showed that the flues were already red-hot, and great damage done to the boiler.

Let me say further, to the credit of the engineer, that he at once shouldered the whole of the blame, and told me to figure out what the damage was, and charge it up to him. As he had been a very good and faithful man, however, and had never had an accident of any sort before, I told him I would wait a while before I made out my bill of damages. When things got settled a little, careful investigation brought out the fact that the boy had forgotten to open

one of the valves. He cried, and seemed to feel much remorse at the consequences of his boyish blunder. He did not tell us to charge up to him his part of the affair; but as he had been a pretty good and faithful boy, I concluded to let it pass. Imagine my surprise, a few months later, when the engineer told me he guessed I had better have a talk with F. He said that F. was all the while complaining that he did not get as much pay as he thought he ought to have, and it was really spoiling his value as a boy. I had a pleasant, good-natured talk with F., and reminded him of the accident that had cost me more than \$100, just because of his forgetting to open that valve. Said I:

"Look here, F., if you should work for us a whole year for 2 cts. an hour less than you are really worth, it would not make up for the consequences of your blunder. If I were you, I think I would keep pretty quiet about an increase of pay for quite a little spell, after what has happened."

He took it good-naturedly, and finally said that, if I would give him a steady job right through the *winter* at 10 cts. an hour, he would be perfectly satisfied. Well, you know that, during the fall, there has been a financial depression all over the land. We found it hard work to find something to do for even our old regular help. One hand after another was dropped, until we should have been glad indeed to give F. a vacation with the rest; but my promise stood in the way of that. In a very few days, however, I was relieved of the necessity of finding him something to do, in a very unexpected way. The engineer told me that F. was still dissatisfied with his pay, and that he guessed I had better let him go for a while until he could discover for himself when he was well off. In fact, he said he thought F. would not stay any longer without an increase of wages. I talked with F. again, and reminded him of his promise. But this boy in his teens had got a raise of wages in his head to such an extent that there was no help for him. He finally said something like this:

"Mr. Root, you know as well as I do that I am worth more than 10 cts. an hour."

"No, F., I do not know any thing of the kind; and it seems to me the common-sense way to settle all disagreements of this kind between capital and labor is to ask the question whether you can get more than that anywhere else. Are you *sure* you can find a place where you can get more than 10 cts. an hour? Please remember the hundreds and thousands who are out of employment—good capable men. Why, F., a good mechanic offered yesterday to work for me during the winter for 10 cts. an hour, rather than be idle any longer. You are a boy. It is true, you have, through diligence and good behavior, learned enough in one special line so you could earn what you are getting with us, providing we had plenty to do, which we have not. However, as you feel so sure that somebody else will give you more, suppose you try it."

Accordingly, he did give up his job, and started out to find somebody who would pay him *what he was worth*. This getting restless, uneasy, and dissatisfied, seems to be a sort of disease sometimes, and there is only one kind of medicine that I know of that has any effect on it. Good advice, a plain statement of well-known facts, and all that sort of thing, do not seem to make any difference. The only way is, to let the boy have his own way, like the prodigal son we are told about in the Holy Scriptures. F. put off his greasy overshirt and overalls, donned his Sunday clothes, and looked, as he is, a nice, bright, clean specimen of a young man. I do not know how much hunting he did for a place; but he came back in a couple of

weeks, and said that, if I would give him his place back again he would be contented to do the best he knew how. But it was too late. Another very good boy was doing so well in F.'s place that we could not think of turning him off. This other boy was also skillful in the machine-shop, where he worked a great part of his time, so there was no prospect, for some time to come, of an opening for F. anywhere. Another thing, the man who employs labor dreads having any thing to do with *dissatisfied* people. A dissatisfied man is seldom a profitable hand. Peter Henderson suggests, in one of his books, that it is better to pay a good man a little *more* than he is worth, sometimes, rather than have him go about his work in a dissatisfied way. Well, I have tried that remedy, but it has seldom worked satisfactorily. The man who is dissatisfied at 15 cts. an hour will pretty soon become uneasy again until he has 20 cts. F. finally came around again and said that, if I would give him something to do, he would work for *whatever* wages I thought I could give him, and try to remember when he was well off. But still I could do nothing for him. He became weary in well doing, in the language of our text, and he is now reaping the reward, for I suppose the text works both ways. The man who becomes weary in well doing shall *also* reap. In fact, we have Scripture for it. "Whatsoever a man soweth, *that* shall he also reap."

Perhaps the most direct application of the text I have quoted is in regard to spiritual things. All along down through the ages people have become weary in well doing. In that wonderful chapter in Malachi the prophet says the people are dissatisfied, and break forth in a general complaint something like this:

"Ye have said, It is vain to serve God; and, What profit is it that we have kept his ordinances, and that we have walked mournfully before the Lord of hosts?"

That word "mournfully" seems to me to come in very aptly. There are people in every age and generation who talk that way. They say, "Who wants to go about always with a long face, and be afraid of doing this, that, and the other, because somebody may call it wicked?" Then the Christian—perhaps oftener the young Christian, but perhaps sometimes the old one—says to himself, "Well, I declare! I do not believe it worth while to be so very precise. Other folks are having a good time all around us, and why shouldn't we have our share, instead of being so very conscientious and puritanical?" Like poor F. they give up reasonably fair prospects, spend what little they have laid up for a rainy day, and then repent at leisure because they did not know when they were well off. Sometimes it is not money alone that they have wasted. The consequences of having a good time, "as the rest of the boys do," are a terrible appetite, or, worse still, a contagious disease that hangs to the poor victim every day and every hour for the rest of his life. "Whatsoever a man soweth, *that* shall he also reap."

Now, then, dear friends, old and young, if you have been thinking that a careful, honest Christian life was almost too tame and humdrum for this day and age of progress, consider what I have just said. Let me give you one more illustration right before me:

A man came to me a few days ago and asked for work. I told him there was no use in detailing his circumstances—it was absolutely impossible for me to help any more people in that way. He pleaded that he was a stranger in the town, out of money, with a sick child on his hands; and he said, furthermore, that *folks told him*, if he would come to me, I would give him some work—that I always gave people who were in distress, and he was even beginning

to complain as though *I* were *responsible* for his troubles. I was told afterward that he had a steady job in Cleveland at \$1.35 a day, but somebody told him I employed help and paid a good deal more than that. Without even writing to inquire, or making a journey himself, he gave up his job and moved his family to Medina; and the last I knew the King's Daughters were helping his wife and children along until the father could get work. He finally came to me in such desperate straits that I told him I had some wood that I wanted chopped, and said I would pay him 60 cts. a cord, stovewood length. He said that, if he only had an ax and saw he would take up with my offer in a minute. I told him I would furnish him both ax and saw, and go out in the woods and teach him how to do the work most expeditiously. After I made the promise I considered how many responsibilities were on me already, and felt sorry that I had undertaken to look after one more helpless individual. The ax and saw were put in order, and I placed them where I could find them quickly when he should come along, drawing a long sigh at the time, to think the printers were out of copy, and that perhaps more than one was already doing his work wrongly because I could not get time to look after him. Well, when the morning came when we were to start out for the woods, and the needy man did not put in an appearance at all, I drew *another* sigh, but it was a sigh of relief.

Now, then, if I have not got all the truth in my talk to-day. I have got hold of one great big truth; for I am sure one of the greatest reasons why there are not more people who are getting two or three dollars a day, and are at the same time honestly earning it, is because they do not heed this grand old text—

Be not weary in well doing; for in *due season* ye shall reap if ye faint not.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GARDENING IN DECEMBER.

As a rule we have about as little gardening to do in December as in any other month in the year. Of course, there is stuff to sell that has been stored away in the cellar; but people generally are not quite ready for greenhouse products during this month. But something comes in right here that is a little encouraging. I remember that, two or three years ago, when we took lettuce and onions out of our greenhouses in the month of January, the boys would bring them back, saying that everybody made fun of them for bringing lettuce in January. They said the time to buy lettuce was in the spring. A month later, however, when people had begun to get anxious for green things, the lettuce sold very satisfactorily. Since then, however, we have had some sales of lettuce in January; but I think we never sold any of any account in December. I have tried to start a trade in it Thanksgiving and Christmas, but the sales were very small.

Perhaps you may remember that, in my Notes of Travel, page 821, I mentioned the fact that our folks were building plant-beds for lettuce right over the pathway of the big exhaust-steam pipe running from the factory to our home. This was on the 20th day of October that the boys were setting out the plants. I remember that, a week later, our people in passing along there, and seeing handsome beds of lettuce in vigorous growth where there was not

any thing, less than a week before, uttered a good many exclamations of surprise. Well, those beds of lettuce have not had a bit of care since that day. The ground has not been stirred, nor has a weed been pulled; yet now we have about the handsomest lettuce I ever saw in my life. We purposely put it in rather close together; and now on this 11th day of December, just 50 days later than they were set out, we are taking out every other plant to give them room. Of course, they were covered with sash; but the weather has been so severe that the sash has hardly been off unless it was to catch an occasional shower of rain. By the way, the very best remedy for the green fly I have ever found is to give the lettuce-plants a good soaking for 12 hours, or, still better, 24, with a rather cold rain. If the plants are properly hardened by tilting the sash, any rain that is not so cold as to freeze into ice will do the lettuce no harm; and even a little freezing does not harm it much. When it gets tall enough so that the foliage rests against the glass, the frost on the glass will injure it. Well, these plants I have been telling you about were, so many of them, touching the glass, that, day before yesterday, we raised the sides of the beds all around to accommodate the extraordinary growth. We did this with 1½-inch lumber. To hold those side pieces in place, a skillful mechanic first toenailed them to the sides of the bed. This was to make a close joint to keep the frost out. Then these 4-inch plank were held from tipping over by driving a stake down inside of the bed at every joint, and another stake in the middle of the 16-foot plank. The stakes would not be necessary were it not that the sash sometimes have to hold a heavy weight of snow; and if they should tip over, crushing down a big crop of lettuce, it would be rather expensive. The reason why these lettuce-beds have required so little care, is, that they have a steady, constant heat day and night, week in and week out. Speaking about this steady, constant heat, reminds me that I have not yet told you that my new discovery in utilizing exhaust steam is now running six different radiators in our home. I do not suppose that everybody feels as happy over them as I do. Two of them — those in our *b's* rooms — are nicely bronzed; and as I exhibit them to admiring friends I usually say, "There! do you see that? — a 'thing of beauty and — *h-t* for ever.'" Now, isn't this just wonderful, that we can take such an irregular source of heat as exhaust steam, and make it send a steady, even, and constant stream, and afterward, by means of hot-water radiators, have this steady, even, constant heat *concentrated* at any one point you choose? Mrs. Root could not believe that such quiet-looking, innocent things, hardly warm enough to burn a person's hand, could heat up a good-sized room; and it does look a little funny. It is true. The secret is, these modern radiators with their many coils contain a vast amount of heating surface; and even if the inclosed hot water is not up to the boiling-point, if the machine is kept steadily at work it sends a great quantity of warm air all over the room. But this is not gardening.

How about selling the lettuce? Why, when we got ready I told the boys to put ¼ lb. in a good strong neat paper bag, and fill a basket with these packages. They sold the whole lot the first trip, sold out again the next trip with a larger quantity, and the prospect is now that we shall get rid of all the lettuce in these plant-beds, right in the middle of December, at 20 cts. per lb.; and I am not sure but real nice lettuce, bleached so as to look almost like White Plume celery, would bring 20 cts. per lb., at least a certain quantity of it, *any day* in the year, winter

or summer. Now, then, you who raise lettuce for market, what do you think of a string of hot-beds that carry an even, steady heat, all along, without costing a cent for manure or any thing else in the way of heating-material, after they are once started? Do you say everybody can not have exhaust steam? Well, my friends, exhaust steam is spouting out and wasting its heat in the wintry air, in almost every neighborhood and community throughout our land; and I believe that, as a rule, men who run engines will be very glad to have you take their exhaust steam off out of their way, providing you give it sufficient room to move so it does not back up on the engine.

ONION GROWING, ETC.

I have had considerable experience in growing onions by the different methods, and have also grown many different kinds; but I'm not certain of having any thing new to offer.

Of the different methods of culture, I prefer the new one—that of transplanting the young seedlings from the hot-bed—especially so if it were not for one trouble—that of the plants dying down in the beds. I have studied hard to find out the cause, but haven't fully succeeded. I believe the vitality of the seed has much to do with it. I have tried several different strains of the Prizetaker variety from different seedsmen, and find quite a difference. Three years ago was my first experience with the new method, and I had no trouble whatever. We raised an excellent crop, an average of nearly 900 bushels per acre, on a rich clover gar-len-patch; but the last two years we have not been as successful, owing to the trouble mentioned. I have raised some seed of my own, and taken special care of it, and I hope to overcome the trouble fully.

We have been troubled a good deal with worthless onion seed. The White Victoria has turned out every time to be a worthless flat onion of no value at all. We did not pull them this year. We let them stay in the ground, and pulled them early in the spring for bunch onions. This is the only way we ever derived a cent's worth from these onions. I will sow no more of this variety. I like the Southport White Globe pretty well as a white onion for transplanting. It is a late onion, and grows to a fair size. It is the best white onion I have tried so far. But I don't think there is any thing ahead of the Prizetaker for the main crop. It is not as good a keeper as the Southport White Globe.

We grow a good many the old-fashioned way. "The good old way of yesterday" is not so slow; and, as a rule, it is the safest.

I like the Southport Yellow Globe a little better than Yellow Danvers. It is a little heavier yielder, of a better shape, and nearly as early. It is an excellent keeper.

The Southport Red Globe is a good onion, but not a good yielder for a red variety. It is nearly as early as Yellow Danvers, which is its chief point. Prizetaker is a heavy yielder, but must be sown very early or it will not mature, and must be put on the market early. We bought some seed of our local dealer last spring. We bought it for Yellow Danvers; but it turned out to be some other very late variety, and was about a fourth scullions. I never saw any thing like it, and never want to again.

We have not found any thing better for bunching than the old Egyptian Potato onion.

I have not much room to speak of commercial fertilizers; but for the benefit of any who are thinking of listing them I will say that I have tried several kinds, including Mapes' "special onion" manure, at the rate of 800 lbs. per acre;

and by very careful measurement we have not found them of any value whatever, nor unleached hard-wood ashes from our sugar camp. Give me plenty of composted stable manure and a rich clover sod, and I can grow onions profitably at 75 cents per bushel, if I can get first-class seed, which is of vast importance. I know by experience that poor seed is dear at any price.

E. S. MEAD.

Olivet, O.

[Friend M., I am surprised to hear you say that you never had any nice Victorias. Surely you do not mean to say that seed you bought of us has turned out in the way you mention. By the way, is it not true that every new strain of onions when first sent out produces a much better crop than the seed to be had in the market two or three years later? It may be that, like potatoes, a new variety is needed every two or three years. My opinion is, however, that somebody is needed constantly who will grow seeds as carefully after the onion has a reputation as he did when he was selling sample packets of a new variety. Oh what a chance there is for seedsmen, or, rather, for a real honest, earnest seedsman! A few days ago our veteran friend A. W. Livingston made us a visit. He asked me if I did not want some Yellow Globe Danvers onion seed. I told him the price was too high; but when he said they grew the seed *themselves* I made an order at once. If Mr. A. W. Livingston saw the onions selected for this crop of seed, and supervised the growing and saving of the seed, I would readily pay a dollar a pound extra for it. It seems that you too, friend M., do not get any help from commercial fertilizers. Now, then, who does get any help—that is, where they put the fertilizers on, say, a dozen rows and then a dozen rows without any?]

SHALLOTS, CHIVES, ETC.

Friend Root:—By this mail I send you two white shallots (in German, *Schallotten*) and two red ones. We are raising them since coming to this country (8 years), and consider them the best keepers, if they are taken out of the ground about the 4th of July. I can not get at chives now; will send you some later if you do not get any elsewhere. In German it is called *Schnittlauch*.

B. GEISSLER.

Basco, Ill., Dec. 8.

[Now, friend G., we are ever so much obliged to you for those beautiful, firm, pearly-white onions; but they have got us into trouble already. You call them white shallots. I thought shallots meant something like Egyptian onions for spring bunching only. Now, I should call these White Multipliers, except that there is nothing to show that they multiply or divide. Will you please tell us the difference between a shallot and an onion? also, how do you get these beautiful shallots that are ready to pull in July? Do you plant seed or sets? Thank you for your offer of chives; but we have received several lots already; and the perplexing thing is, they are not all alike. Those sent us by friend Goldsboro are something like a leek, and are as large as your finger. Somebody else sent us some that looked like potato onions, and yet all call them chives. I am the more glad to get the communication from you, friend G., because you are a minister; and if you don't know about these things you can doubtless get us on the right track. I want to see shallots, chives, potato onions, multipliers—yes, and perhaps even leeks and garlics—straightened out and put where they belong. Now, who is going to help?]

CHIVES.

The remarks you make in Nov. 15th GLEANINGS regarding "chives" awaken some very pleasant memories of our boyhood days when, mother, with her loving hands, prepared and handed us the customary bread and butter for the 9 A. M. and 4 P. M. lunch. How many times we went out into our little vegetable-garden in the back yard, to get some of the chives, which we would cut up into little pieces about $\frac{1}{4}$ to $\frac{1}{2}$ inch long, and cover our bread and butter with them! How we enjoyed these simple lunches! This was over in the old "Fatherland," a good many years ago. The chives have come over with us, and a number of bunches are growing in my garden. I would have sent you some of the roots with this; but it may be that you have received from others all you need by this time.

FRIEDMANN GREINER.

Naples, N. Y., Nov. 21.

TILE DRAINAGE; WATERING-PLACES FOR STOCK.

I have read "Tile Drainage," by W. I. Chamberlain and yourself; but I should like you to give me some information not in the book. I wish to drain my spring with tile, which is 900 feet from the river, and I want several watering-places for stock. The tile will be 3 feet below the surface where I want the watering-places; and as I have had no experience with draining I do not know how best to arrange those watering-places. We have splendid building-stone. We could scoop out a way down to the watering-place, and pave with stone so the stock would not work the dirt down into the opening. There is very little tile in this part of our State, though a good deal in the western part, or, as we term it, West Tennessee. Tile is a good deal dearer at Nashville than with you, from what I can understand. I have some four-inch tile in some wet land, which cost me four cents per foot at Nashville. I live 20 miles south of Nashville. We have a good deal of land in this county that needs tile very badly; and if some enterprising firm that manufactures tile would send a practical man who could explain what is needed they could sell a great deal of it; but most of them are like myself—they know nothing about it. If you can give me some idea how to make the watering-places you will confer a great favor.

W. H. FARMER.

Franklin, Tenn., Dec. 9.

[Friend F., we have been studying over a similar problem all summer, and I will tell you what we have decided upon. I should not like the plan of digging down to a level with the tile, as you propose. Where a road is cut through a hill so you might place a watering-trough beside the road without making an excavation on purpose, it will do very well; but to avoid these expensive excavations I would locate your watering-trough on the top of the ground. If you have plenty of stone, by all means make a stone trough; and in order to get the water up into the trough, you will have to go along the line you propose to lay the tile, up hill, until you get where the tile would be a little higher than the top edge of your trough. At this point make some sort of reservoir—a large-sized tile set on end, for instance. A sewer-pipe 18 inches or 2 feet across is better. Let it come to the surface, and have a stone or wooden cover over it to protect it from trash and accidents. Let your tile pour a stream into this little reservoir. From this lead either an iron pipe, or tiles jointed in cement, down to your trough. If your spring furnishes water the year round, so that there will be a running stream, your trough will never freeze over.

Provide a suitable overflow, and let this overflow go right down into the tiles, and pass off just as it would if there had not been any watering-trough at all. I do not believe the expense will be very much more than the excavations you speak of, and you will have a very much neater job. If there is considerable descent from your spring, you will not have to go up hill very far to get head enough so as to run the water over into your trough. I hope this notice may suggest to some tile-maker the idea of occupying your field.]

DOCTORING WITHOUT MEDICINE.

SOMETHING ABOUT OUR TEETH.

In this age of progress, if you expect any mechanic, no matter how skillful he may be, to do nice perfect work without adequate tools, you are greatly in error. A real nice tool, in the hands of a man who takes hold of it with enthusiasm and energy, will often pay for itself in a single day. Well, my experiments in dieting have pretty well convinced me that a good deal of our ill health, and many of our aches and pains, are the consequence of not masticating our food perfectly before it is turned over to the digestive apparatus. I have been getting quite well acquainted with our dentist lately. In fact, I have spent two or three hours a day with him almost every day for the past two weeks. I told him just why I wanted to ask him questions. He is a bright, wide-awake, live man. He attends the dental associations and lectures, takes the dental periodicals, and I think he is pretty well abreast of all the modern improvements in the line of his work. I happened to mention to him that it was quite a privation to me to give up eating apples right out of hand, as I used to in my younger days. Said he:

"Mr. Root, you take a nice apple—just ripe enough, but not too ripe—and scrape it with a knife, just as women do sometimes for babies, and then you can eat apples with impunity. Just try it, and report."

Sure enough, I found he was right. I can eat all the apples I please if I scrape them up fine and smooth. How does this come? Why, my teeth are getting to be so old and ricketty that they no longer pulverize and crush every particle of the apple as they used to do when I was younger. The consequence was, that I swallowed the apple in the form of lumps or chunks, more or less. The teeth were not doing their business—could not do their work, perhaps—therefore the stomach could not do its work without great effort; hence distress, uneasiness, and perhaps indigestion. Baking the apples, or making them into sauce, might do pretty nearly as well; but I have quite a fancy for a raw apple, uncooked and unsugared. Again, I happened to notice in one of the health-journals that people who are distressed after eating beans will find they can eat them with impunity if they are cooked very fine, and then have all the skins removed by putting them through a sieve or colander, thus making a sort of bean porridge or soup. On testing beans prepared in this way I experienced no unpleasant effect whatever. Very likely a strong powerful digestion would manage the chunks of apple, with skins, seeds, core, etc., thrown in, as well as with the skins of the beans. In fact, on my big wheel-rides across the country I eat almost any thing that I ever ate, without any trouble; but even if this is true, it pays to have good teeth, and use them.

While in the dental chair a great many customers came in from the country. Sometimes

they took long rides, tormented every step of the way with toothache. I told the doctor, when he started in on my work, that, as this is our dull season, I would either go home or wait, when he had customers who could not well come some other time. I accordingly left my seat, and stood by while he pulled teeth, advised patients, etc. In fact, I have greatly enjoyed studying up human teeth and dentistry for some weeks past. Well, when it comes night I would rather read a dental magazine than any of my agricultural papers. Most of you know how keenly I enjoy studying up a new industry or a new line of industrial work. By the way, there are quite a few dentists among our bee-keepers. I know a dozen or two. This class of people usually need recreation outdoors; and if the bees are near the dental office the dentists can very often put in their time when there are not very many patients around. And I just want to say, too, that the dentists of our land are a nice set of men; that is, they are as a rule. In the first place, a man who is not a good man would hardly undertake to earn his living by working inside of the mouths of people generally, good, bad, or indifferent. In fact, I think they might put up my favorite text for a motto over their doors—"Not to be ministered unto, but to minister." I know they make us groan and howl sometimes; and it was a rare study to me to see my friend and neighbor go to work to relieve suffering, even when he knew he must inflict terrible pain before the relief could come. I learned to see by his face when a difficult case was before him; and I heard him exhort his patients—yes, I heard him exhort *me* a few times—to go through with the ordeal with a brave spirit. I believe he suffered almost as much as they did, sometimes.

Well, if there is any business in the world where "a stitch in time saves nine," it seems to me it is caring for the teeth. After some of the very difficult and painful operations of extracting the roots piece by piece, of decayed teeth, I would ask the question:

"Doctor, if this individual had cared for his teeth, had them looked over very frequently, and promptly filled as cavities appeared, am I to understand that all this suffering and loss of teeth would have been saved?"

"Most certainly."

Some years ago I think our dentist told *me* substantially the same thing; and for several years I used to come to him, say once in six months. A good many times, after a careful examination, he would tell me my teeth were all right, and needed no attention, except that they be kept clean. Finally, like other people, I became careless and let several years go by. Then there was a great amount of filling to be done; some teeth were hopelessly gone, and one had to be extracted; and as the result of that neglect, my teeth got into such shape that it was very difficult for me to chew my food thoroughly. After having had one tooth pulled, and suffering ever so much from the toothache, I made a new resolution, and had my teeth attended to every six months again. Since then I have not had a bit of toothache. But recently the dentist decided that quite a number of my double teeth were going to pieces unless they had prompt care. After discussing what was best to be done under the circumstances, I decided to have them capped with gold, and the missing ones replaced by attaching them to the gold caps on each side; and as I dictate this I am rejoicing in having, for the first time in years, a full set of tools for mastication. Before investing in so many I had one capped, something over a year ago, to see how I liked it; and now I can do good work on almost any kind of food. During nearly two weeks, while the

gold caps were being fitted, I was obliged to live on soft or semi-liquid food, or have whatever I ate mashed up very fine. The beneficial effect on my health became apparent at once, and the experiment gave me an opportunity for deciding unquestionably that much of the distress and difficulty I have with my digestion is owing not only to a lack of mastication, but perhaps to the use of skins of fruit, or vegetable food in such a coarse state that the digestive fluids can not readily work it up fine. My friend, if you have trouble with your digestion, just try using only food that is mashed up fine, or in a semi-liquid state.

I know a good many will plead that they can not afford to pay the dentist so much money. But, my friend, you can afford to have a tooth pulled when it aches; and you may think you can afford letting the teeth go to pieces; but I do not think you can. And, again, you can afford to send for a doctor when you are sick. That may be all very well; but by sending for the dentist a year or two *before* you send for the doctor, you may be saved much pain and suffering, and money too. A good many of us are inclined at times to lose faith in doctors, or, at least, in drugs and medicines; and perhaps no one can ever settle the question conclusively as to whether the drugs and medicines did any good or not. But there is no chance for any question when a broken bone is to be set or some surgical operation is to be performed. In these cases the doctor's work is almost as plain as that of the carpenter or blacksmith. You see what he does, and you see the result of his work; in fact, you have a tangible result in your possession, in place of the money you have paid. Now, it is so in dentistry. The dentist fits you with good and efficient tools for performing almost the most important work a human being has to do. Some of the best physicians we have of the present age are curing people by simply furnishing nature with the right kind of material (in the shape of proper food), so that she may herself do the mending and repairing. Going to a dentist often, that he may keep your teeth in good trim, may not be exactly "doctoring without medicine," but it is certainly one line, and a very important one, of improving our general health without either drugs or medicine. Some years ago our dentist had some circulars printed, which he gave away to the public. I have thought best to give a few extracts here in conclusion:

Do not have a tooth extracted unless it be from absolute necessity, and of this allow your dentist to be the judge. The toothache is but the penalty of violated law. Nature never pardons an offense against her. She may reprieve, but she never pardons. Never part with a tooth, nor the root of a tooth, that can possibly be made serviceable, any more than you would permit a surgeon to amputate a finger that has a felon on it; for a tooth once removed from the mouth is lost for ever, and can never be restored. The contour of the face thus disfigured can never be restored in all its symmetry by artificial means. When the relation of the teeth, mouth, and mastication, to digestion, is better understood, we shall have better care of the teeth and mouth, and people will be more careful to masticate their food thoroughly before swallowing it. Disease is said to be a sin. We acknowledge the truth of the saying, but go on sinning, by doing, or neglecting to do, the things which will produce or prevent disease and consequent suffering. "Peace on earth and good will among men" can not reign so long as decayed teeth and offensive breath exist. This is one of the penalties of individual neglect.

On arising in the morning, use your tooth-brush vigorously, for that is the time that the mouth is in its worst condition; and of all times this is the one when you should use something to cut the secretions, as you use soap to remove grease and other matter from the hands. By so doing, you will soon be surprised at the wonderful appetite you have for breakfast.



The Lord is slow to anger, and great in power, and will not at all acquit the wicked.—NAHUM 1: 3.

Eight extra pages in this issue.

THE new series of the *Canadian Bee Journal* is proving to be a great improvement over the old series.

DR. MASON looks too sober in the picture of the Ohio honey-exhibit shown in another column. Say, doctor, why didn't you give us a square look?

A VERY important point brought forth in the article by R. L. Taylor is, that "age is no disadvantage to foundation." This confirms what Mr. Doolittle said in a late number. Until facts shall be brought forth to the contrary, we shall advise that foundation be not rejected simply because it is old.

SPECIAL attention is called again to the book review in this issue. The thing that is particularly interesting is to see how generally Huber is right and how generally Huish is wrong. Fortunately we are placed at a time in the world's history when we know almost to a certainty the right and the wrong side of the disputed points between Huber and Huish.

THE *American Bee Journal* has just been making some "Inexcusable Mistakes." We are sort o' glad of it, because over this way misery loves company—see page 884. Well, to do a little more confessing ourselves, we headed Mr. Boardman's item, on page 889, "Raising Sweet-clover Seed," when we should have put it, "Sowing," etc. Couldn't blame this on to the types this time.

Good men may honestly differ. Alack the day when editors or correspondents can not express honest convictions for fear they may hurt the feelings of the other side! Where there is an honest difference of opinion, as there may be between Bro. York and ourselves with reference to the Michigan Experiment Station, there will be no wounded feelings, because each of us accords to the other sincerity of purpose and honesty of opinion.

THE publishers of the *American Bee-keeper* are about to undertake a novel plan of making their deadheads pay up. They propose to "publish a list of the accounts" in their February number, and "will offer them to the highest bidder." The list will include back dues on subscriptions. No doubt the list will speedily grow smaller before February. The scheme is not a bad one to make the "poor-pays square up;" but we shouldn't like to undertake it.

DR. MILLER, in Straws, picks us up on the statement, made in answer to a correspondent, that "non-swarming means in most cases little or no honey." We will acknowledge to the doctor that the statement as we left it is a little open to criticism. What we had in mind, although we see we did not say so, was, that the effort, on the part of the apiarist, including all the various fixings to prevent swarming, so disconcerts the bees, that, if they do not swarm, they do not gather honey.

OUR exhibit of supplies at first was back in a corner, as Dr. Mason explains in another col-

umn; but this was through no fault of Dr. Miller, who first set it up. Even after the Fair was open, it was a long time, owing to the general confusion, before Buchanan would say where the exhibit should be put, although we had engaged a certain space. After much solicitation, Buchanan finally put his foot down on the floor where one corner of the case might come. Dr. Miller marked the spot with a nail, glad to get even something definite. Our exhibit, being among the first put up, showed up a little in the rear when the others were put up.

YES, Dr. Miller, I did hear things a little differently twenty years ago from what I do now, and may God be praised for an enlightened hearing. But I take exceptions to your expression, "Every bicyclist seems to be inclined to double himself up like a letter C." I have always ridden straight up, and I always mean to ride straight up; and although I never expect to enter the lists among the racers, yet I get along pretty fairly. In regard to football, I think it is high time that some of our college professors were taken by the collar and straightened up. I am afraid there are other people besides the wheelers who are inclined to double up like a letter C, especially when the "gambling mania" gets a clutch on our sports and recreations. A. I. R.

THE *Progressive Bee-keeper* says: "No class of publications can show as clean advertising pages as the bee-journals of to-day. They are free from quack doctors and other humbugs that fill the columns of many of our newspapers. Even our religious papers are full of swindles." Mr. Leahy has put it about right. We are surprised and ashamed that some of our best religious papers do contain in their advertising pages that which is not bread, and satisfieth not. They of all papers ought to be the leaders in good clean advertising, as well as in every thing else. We reject a large amount of advertising because we do not want our readers duped, and because we do not care to lumber up the cards of our regular patrons with every thing under the sun, good or bad.

THE year 1893 will soon be gone; and, according to the general custom, we presume we ought to express suitable acknowledgements for past favors, say something appropriate for the season, and then tell what we are going to do for 1894. When we see in so many journals the usual stereotyped platitudes of the season—well, somehow it makes us "tired." There is nothing magical about the ending of the old year or the beginning of the new. GLEANINGS proposes to go on, just as it has been doing, but always looking for improvements first, last, and all the time. Of course, we've got lots of new schemes for the new year, but we think it better to let them materialize at the proper time, unheralded. These remarks are not suggested by any thing appearing in bee-journals of late—they are too practical for platitudes.

PROF. A. J. COOK's future address will be Claremont, Cal., care of Pomona College. The apicultural world will probably hear from him the same as formerly. We hope that, in his new home, he will find so much to write upon apicultural matters that he will have nothing to say about sugar honey. We are very sorry to see that he has been writing more articles on the subject for some of our apicultural papers, even intimating that he believed that there was a large amount of such honey on the markets. If there is, it is not sold under its true name. That being the case, and it being produced in quantities, it is sold for genuine bee-honey, and

this is almost as bad, in point of deception, as the glucose fabrications. We feel quite certain that Prof. Cook must be mistaken. So far, California honey can be produced and put upon the market more cheaply than any sugar honey. And now that Prof. Cook will be in that land of sunshine, we hope he will see that sugar honey is not practical, no matter what else he may say about it.

We call special attention to the article of R. L. Taylor, in this number, on the subject of the bases of the different grades of foundation. The subject is a vital one to bee-keepers; and we, as manufacturers of foundation-mills, are already at work to see how we can remedy the trouble—namely, of thinning down the bases of foundation unnecessarily thick—because it seems to be a fact that bees require them to be only $\frac{1}{16}$ of an inch thick, and that they will reduce to this thickness if not already so. We can make foundation of almost any weight; but it is not so easy a matter to reduce the bases of all grades of foundation to a hundredth of an inch, making up the difference in weight in the cell-wall. We believe we have the most perfect machinery in the world for making foundation-rolls, and we shall do all in our power to solve the problem, because it is a waste of time for the bees and perhaps of material to have the bases or septa too thick.

The last consignment of imported queens to Australia went through in rather bad order; in fact, it was not alone the queens sent from Medina, but those sent from various parts of the United States. The complaint seems to be that the candy became so soft and messy that it daubed up the bees and queen too. In our own case, the food was made precisely like that upon which queens at other times have been sent to Australia so successfully. We can not imagine why the candy should have become soft, unless it was from a dose of sea-water, or because of a very hot climate into which they may have gone on reaching their destination. A summer candy, we know, must be made harder than one designed for cool weather. But when queens leave here at the approach of winter, when the weather is very near freezing, and then finally in three or four weeks more come into a climate that is excessively hot, the conditions are complicated somewhat. If we can be sure of the same climate clear through, we can insure safe arrival of queens. We shall try again.

MR. LANGSTROTH AND MR. ROBINSON.

We are sorry to see that C. J. Robinson, in the *American Bee-keeper*, is again casting reflections upon the good name of Rev. L. L. Langstroth. Mr. R. brings up old controversies that are of no particular importance now; and even if what he says is all true he manifests a jealous spirit, not to say a bad one, toward the name which we as bee-keepers all over the world hold in grateful remembrance. If Mr. Langstroth were in health, so that he could answer the imputation of what practically amounts to a lie placed against his name, the case might be different; as it is, it is in bad taste. When Mr. Langstroth visited us a couple of years ago he explained to us in detail this whole matter. He spoke very kindly of Mr. Robinson, and expressed regret that he (Mr. R.) should feel toward him as he did. Mr. L.'s statement of the case, if it were published, would quite satisfactorily explain certain discrepancies Mr. R. places against him. It is not necessary for us to go over the details, even if we could remember them distinctly as given to us by word of mouth, for the bee-keeping world to-day is not interested in it.

THE HABIT OF SCORCHING ON THE BICYCLE.

QUITE a number of doctors, including our friend Dr. Miller, are poking fun at the fashion of bicyclists in leaning over while in the saddle. Most of them who condemn the practice, insisting that this method of riding is injurious, are those who are unskilled in the use of the wheel. The fact is, there are extremes both ways. There is such a thing as riding like a bean-pole, and there is such a thing as humping the back so that the rider actually looks like a monkey on a stick. This last is unnecessary, and probably injurious; but we know from personal experience, and a very wide observation, that a slight leaning forward of the back, keeping it straight, and the shoulders back, does tend very materially to add to the effort of the rider, as well as to give him a better leverage in climbing hills. Some time ago a certain doctor, who said in a bicycle journal that, although he made his living by his knowledge of medicine, so long as he could ride further and easier by "scorching," he was going to do it; and that so far in actual practice he could discover no injurious effects.

If, for instance, one is running or climbing stairs he finds it much easier to lean over; so in riding a bicycle. Most of our long runs of from 75 to 100 miles per day have been done with the back inclined at an angle of nearly 45°; and having tried the perpendicular form and the other, the last has given the greatest comfort. Yes; but theory says this is all wrong; but practice doesn't.

"But," you ask, "why do you take all this space in a bee-journal to defend a practice that is so generally condemned? Simply for the reason that, as we expect to go among bee-keepers next summer as usual, we do not want to be thought foolish and idiotic for riding with the back slightly inclined.

P. S.—We have just this minute noticed that A. I. R. has touched on this subject. Well, if we don't agree, remember that we have ridden more miles.

BAD COMPLAINTS AGAINST ADVERTISERS; HOW WE DEAL WITH 'EM.

ONE of our best and most reliable commission houses—one that bee-keepers have spoken of in the highest terms—has received a bad complaint from a bee-keeper who claims that he was unjustly used. We have looked the correspondence over, and, as nearly as we can make out, the bee-keeper is himself to blame. The commission house in question did more than it agreed to, and still stands ready to do whatever is within the bounds of reason.

The older we grow in business experience, the more we are convinced that it is not possible to please everybody, or to do business always in such a way that an occasional awkward and bad mistake may not occur. Some of our statements have been so misconstrued by malicious parties as to make it appear, on the face of things, that we are unjust, dishonest, unreliable, and every thing else that is bad. In some cases we know the parties who think this way of us actually feel that we are dishonest, and that they have been greatly wronged, when, if they knew the facts, they would think very differently, even though they might not be willing to acknowledge it.

So, then, when we receive a bitter complaint like the one referred to, relative to some one of our advertisers, it is not our custom to jump at conclusions, and publish the party, but simply present the facts as they have been presented to us, and let him give his side. In nine cases out of ten the whole complexion of the matter is changed when we know both sides. So we say

here to our would-be complainers, that we do not propose to publish as frauds, and unworthy of confidence, those against whom a complaint has been made, without hearing all sides, and, as a general thing, even then not until two or more complaints have been made against the same party. We nor any one else has very much patience with a man, however, who persistently refuses to answer letters. In such cases we assume he is actually guilty of the charges preferred against him, and govern ourselves accordingly. Those who have had experience in business, we find, are more apt to exercise a little charity than those who are unable to understand from practical experience how mistakes may occur in business.

BEE-PARALYSIS; SLANDEROUS STATEMENTS.

BEE-PARALYSIS (nameless bee-disease) has been found difficult to cure. We once thought the change of queens would remove the trouble; but reports show that that doesn't work. Later, strongly salted water sprayed on the combs was said to be a specific. Sometimes it seems to work a cure, but more often not. The last is sulphur; and as this remedy is cheap and simple of application it may be well to give it at least a trial. A correspondent writes:

I have had several cases of bee-paralysis, and salt had no effect. But I have discovered that powdered sulphur, well sprinkled over combs and bees, cures the worst cases in from one to three days. When bees get lazy, that is the commencement of the disease, and an application of sulphur kills the fungus growth, and the bees go to work with a vim. I have cured ten cases with it, and it does not injure the bees.

JOSEPH MONNIER.

Planter, Fla., Dec. 7, 1893.

Perhaps it may be well to state, in this connection, that we have been accused by a certain party, through an agricultural journal, of sending this disease to the Pacific coast. The accusation comes from a party who holds a personal grudge against us, and who fails to tell the name of the bee keeper who is alleged to have received the disease of us, evidently for the purpose of preventing us from defending ourselves, or of making an investigation. The *Rural Californian* has had in the past similar libelous attacks from this same party. The publisher apologized, as we can prove by a letter in our possession, for the first attack, and promised that there would be no more of it. As there has been a repetition of it, we have placed the matter in the hands of our attorney; and the *Rural*, and all other papers who copied that item, will deal with him and not with us. The fact is, that the apiary at the Home of the Honey-bees has not had a case of bee-paralysis for some years; and even then it yielded to mild treatment (removal of the queen). At one of our out-apiaries we had a mild case that yielded to the salt cure.

BEE-JOURNAL EDITORS AS HOBBY-RIDERS.

In the last number of the *Bee-keepers' Review*, Mr. Hutchinson writes very entertainingly of hobby-riding, of the tedium of riding the bread-and-butter hobby too long and too hard without a respite, and how to vary, or, rather, how he varies, the monotony between times by riding other little hobbies as a sort of recreation. His experience has been almost exactly ours, and we were not surprised to note that he has been riding some of our old hobbies; viz., machinery, printing, bees, amateur photography. We remember we tried once to get him on to this last; and now if he will get on to the bicycle hobby there will be two (perhaps more) bee-journal editors with nearly identical interests and identical pleasures. How well the

"you push the button" hobby has served to add interest to our respective journals is evidenced by their illustrated pages.

Mr. Leahy, of the *Progressive Bee-keeper*, says the click of the type-writer and the hum of business once had its attractions, but now he finds it necessary to vary it somewhat. He proposes to seek rest and enjoyment, after the toil of the day, in the hoe. Editor York rides a bicycle; and whether he rides any other than his special line of business, we do not know.

We do not mean to carry the impression that bee-journalism is dry and uninteresting—not a bit of it; but we do mean to say that those journals are better because those same editors have a little recreation of hobby-riding under control.

MEETING DEATH BRAVELY.

I AM charged with giving the impression, either by direct statement or inference, that none but Christians die bravely. Dear friends, I did not mean to do any thing of the kind, for I know full well that many who have no faith whatever meet death bravely and unflinchingly. They die exactly as they would have a leg or an arm amputated, scorning to shrink from that which must be faced; and I honor these noble men and women for meeting that which they must meet, in a manly and womanly manner. During our recent war, and during accidents by flood and fire, we have many examples of this. Yes, and railroad engineers, and others occupying responsible positions, have many times marched bravely into death, simply that they might save the lives of those intrusted to their care. Perhaps I am not competent to decide in regard to such matters; but my belief is, that God is pleased with this kind of unselfish and unflinching devotion to the good of humanity. It may be that it counts for more in his sight than the mere fact of having been a member of the church all one's lifetime. Our proof-reader suggests right here, that these examples of Christ-like sacrifice are the result, largely, of living in a Christian nation. Among the heathens, and in heathen lands, such instances are very rare. When the people of the United States were doing so much to relieve the starvation in China, they were absolutely obliged to get somebody besides the Chinese to carry the food to the starving ones; and in running railroads through heathen lands we must employ our own people for engineers, conductors, etc. The uneducated savages would steal, and shirk the responsibility at every turn, caring nothing for the lives of others.

What I tried to call attention to is, however, quite a different matter. One who trusts in God, and who believes the Author of the universe looks down upon us with kindness and love through life and death, can do something more than meet death bravely. He can say, with Paul, "For me to live is Christ, and to die is gain." And many Christians die rejoicing, and even shouting, at the glimpses of heavenly glory that are sometimes revealed to them while they yet have a hold on life. Dear friends, it seems to me that this is hardly a subject for controversy. In fact, in striving to teach how to live and how to die, I have studied to avoid controversy, and I am quite willing to leave this matter with you all. If you have not already done so, note carefully the way people have died, whom you have known, and decide in your mind whether Christianity commends itself as seen on a death-bed or not. A. I. R.

I AM really afraid that many of us are complaining and finding fault with the very things we ought to thank God for.

THE following is an editorial that appeared in the *Bee-keepers' Review*; and, in fairness to Bro. Hutchinson, it should be placed before our readers:

E. R. Root calls attention to Hasty's remark, that Mr. Taylor drew conclusions favorable to foundation, and that the editor of the *Review* argued in favor of starters, both using that big table as a basis. Beg pardon, brothers, but Mr. Taylor called attention to the fact that those hived on starters "held their rate of gain decidedly better than those hived on comb or foundation." I then called attention to this fact, and argued that, if the harvest had continued a little longer, or had the test been commenced a little earlier, those on starters *might* have come out ahead. When Mr. Taylor sent in that report he accompanied it by a private note in which he said, "There is a big argument in those figures for starters," and I did wonder a little that he did not enlarge a little more on this point in his summarizing.

TRADE NOTES.

TOP-BARS FOR 1894; TWO SLIGHT CHANGES.

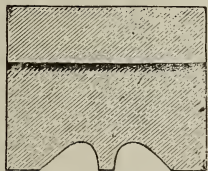
A number of bee-keepers have been asking us what special improvements or innovations we were about to introduce in the line of supplies for 1894; and for the benefit of these and others it may be well to tell what we propose to do, or, rather, what we shall *not* do. Our line of supplies, including Dovetailed hives, Hoffman frames, and thick top-bars, have been so generally indorsed by those who have given them a careful trial, as is evidenced by hundreds of letters we have from pleased customers, now on file, that we shall make little or no change. Aside from this, on general principles it is not wise to make any radical changes too often. When we changed, three or four years ago, from the Simplicity hive, thin top-bars, and metal-cornered frames, to the implements mentioned above, we did so because the signs of the times seemed to demand it. Now no sweeping change is called for. That being the case, for the sake of uniformity of goods, if for no other reason, we propose to keep along in the same general lines for 1894.

But we have made one or two slight improvements. The first one to which we call your attention is in the matter of top-bars. So far from there being a general complaint against having top-bars too thick, too clumsy, etc., there has been a call to have them still thicker.

The top-bar of our Hoffman frame of last year was $\frac{3}{8}$ thick and $1\frac{1}{8}$ wide. In response to a demand for a thicker bar, we changed our cutter-knives so as to leave a comb-guide like what is shown in the accompanying cross-section. The engraving is full-sized, and measurement will show that the perpendicular edges are $\frac{1}{8}$ deep; the comb-guide is molded out as before, but in such a way as to leave square blunt corners opposite it, so that the bees will not take these rather than the center, as starting-points for combs. It will be remembered that the top-bar for last year had the same comb-guide as now, only that the wood was cut away on both sides, so as to leave the sides of the bar only $\frac{1}{8}$ deep.

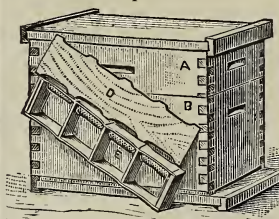
We may explain that the black horizontal line one-third of the way down on the cross-section shows the projection, or that part of the frame that rests on the rabbet.

This change in the brood-frame and top-bar



is so slight that it will not make the least confusion with frames already in use.

Another slight change that we have made, or, rather, are about to make, is in the matter of the wood separators in the comb-honey dove-



tailed supers. Instead of having both sides scored out $\frac{1}{2}$ inch deep, as shown in the separator at D in the small cut herewith presented, we scored out only *one* side. While at the World's Fair, and particularly at

the Big Convention, we learned that it would be an improvement to make this change, because on the upper side the bees sometimes build the comb up above the opening, and out through it, making a slight bulge near the top of the section. On the *bottom* side the separator is scored out the same as before, because the bees seldom if ever bulge the bottom of a comb; and because the section-holder bottom-bar $\frac{5}{16}$ inch thick, together with $\frac{1}{8}$ inch for the section, practically leaves the bottom side of the section entirely covered up.

Special Notices.

We have just gotten out some new designs in labels that we think are the finest that have ever been gotten out for the adornment of honey-packages. If you want to see some of these handsomely colored designs, send for special label catalogue.

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NEW EDITION OF A B C OF POTATO CULTURE, BY T. B. TERRY.



We have finally completed this book which we have been at work on during the past few months, and those who have had their orders in for some time have by this time received the complete book. It is larger than any of the other of our rural books of the series we have published, except "What to Do." It contains 220 pages, fully illustrated, is bound in leatherette covers printed in gold, and is a most valuable book to any tiller of the soil, whether he grows few or many potatoes, or does not grow any at all. If any of our readers desire this or any other of the six books listed with cuts elsewhere in this issue, they may have them postpaid at 25c each, *provided* you send a year's subscription to *GLEANINGS*, with your order accompanied by remittance, and before your paid subscription expires, or not later than the date of expiration; or, if you are in arrears and send in addition sufficient to pay up all arrears and send in advance, you may take advantage of this offer. We still have two or three hundred of the old edition left which we offer to any one who wants them at 10c each; by mail, 13c. If any can not afford the last edition, they will find this old edition a most valuable book, and well worth this small sum. I trust so many will appreciate this offer that our stock will soon find its way into your hands.

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